ACEX-FP-IO-0x

COM Express Front Panel Board for Ruggedized/Military Packaging With Support for I/O Mezzanine Board

USER'S MANUAL

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IMPORTANT SAFETY CONSIDERATIONS

It is very important for the user to consider the possible adverse effects of power, wiring, component, sensor, or software failures in designing any type of control or monitoring system. This is especially important where economic property loss or human life is involved. It is important that the user employ satisfactory overall system design. It is agreed between the Buyer and Acromag, that this is the Buyer's responsibility.

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1.0 General Information

The ACEX-FP-IO-0x is a front panel board that provides the I/O interface for the ARCX-4xxx product family via the 38999 type connections. The ACEX-FP-IO-0x board connects to the ACEX-46xx Carrier via high-speed, high-density ruggedized SEARAY connector. The signals are then passed thru to the XCOM-6400 CPU module via COM Express connector. The ACEX-FP-IO-0x front panel boards supports the use of custom mezzanine modules through the use of ultra-high-density SEARAY connectors.

Models:

ACEX-FP-IO-01 (Single wide)

- Two high-density 130-pin circular 38999 type connectors
  - One Peripheral I/O
  - One PMC/XMC rear I/O
- One 6-Pin circular 38999 type connectors
  - Power input
  - Power On switch

ACEX-FP-IO-02 (Double wide)

- Three high-density 130-pin circular 38999 type connectors
  - One Peripheral I/O
  - Two PMC/XMC rear I/O
- One 6-Pin circular 38999 type connectors
  - Power input
  - Power On switch

Note: Single wide / Double wide refers to the number of supported PMC/XMC rear I/O slots available which is determined by the use of a single wide or double wide ACEX-46xx Carrier board. i.e. the double wide carrier board has two PMC/XMC expansion sites available.

The XMC rear I/O supports the UD (user defined) signals as defined in the ANSI/VITA 42.0 specifications. The DPxx+ and DPxx- signals are not brought out the 130-Pin 38999 connector.

Key Features

- Provides access to standard peripherals of the Type 6 COM Express CPU through high-density ruggedized connector.
  - Two HDMI/DVI ports
  - One VGA port
  - Three USB 2.0 Ports
  - Two RS-232/422/485 Communication ports
  - One SATA port
  - Two Gigabit Ethernet Ports
  - Audio (One Line in and One Line out)
  - Fault/Status LED
- Provides Rear I/O connections to PMC/XMC expansion cards on the ACEX-46xx carrier through high-density ruggedized connector(s).
- Supports the use of mezzanine modules that interface between the system and the PMC/XMC Rear I/O 38999 connectors.
- Designed to meet requirements of MIL-STD-810F environmental specification.

2.0 Ordering Information

ACEX-FP-IO-xx	
xx =	01 = Single Wide – Supports one PMC/XMC Rear I/O sites
	02 = Double Wide – Supports two PMC/XMC Rear I/O sites
ACEX-IO	Pass-through Mezzanine Board

Front Panel Accessories (optional)	
5028-556	38999 #23 size , CPU I/O Peripheral Breakout Cable
5028-557	38999 #12 size , Power Cable
5028-558	38999 #23 size Keyed "A" mating cable connector only
5028-559	38999 #23 size Keyed "C" mating cable connector only
5028-560	38999 #23 size Keyed "B" mating cable connector only
5028-561	38999 #12 size Keyed A mating cable connector only
5028-566	38999 #23 size, PMC/XMC Site 1 Rear I/O Breakout Cable
5028-567	38999 #23 size, PMC/XMC Site 2 Rear I/O Breakout Cable

Note: 5028-566 and 5028-567 cables intended for use with two 5025-288 SCSI-3 termination panels

3.0 Preparation for Use

Unpacking and Inspecting

CAUTION
SENSITIVE ELECTRONIC DEVICES
DO NOT SHIP OR STORE NEAR STRONG ELECTROSTATIC, ELECTROMAGNETIC, MAGNETIC OR RADIOACTIVE FIELDS

WARNING: This board utilizes static sensitive components and should only be handled at a static-safe workstation.

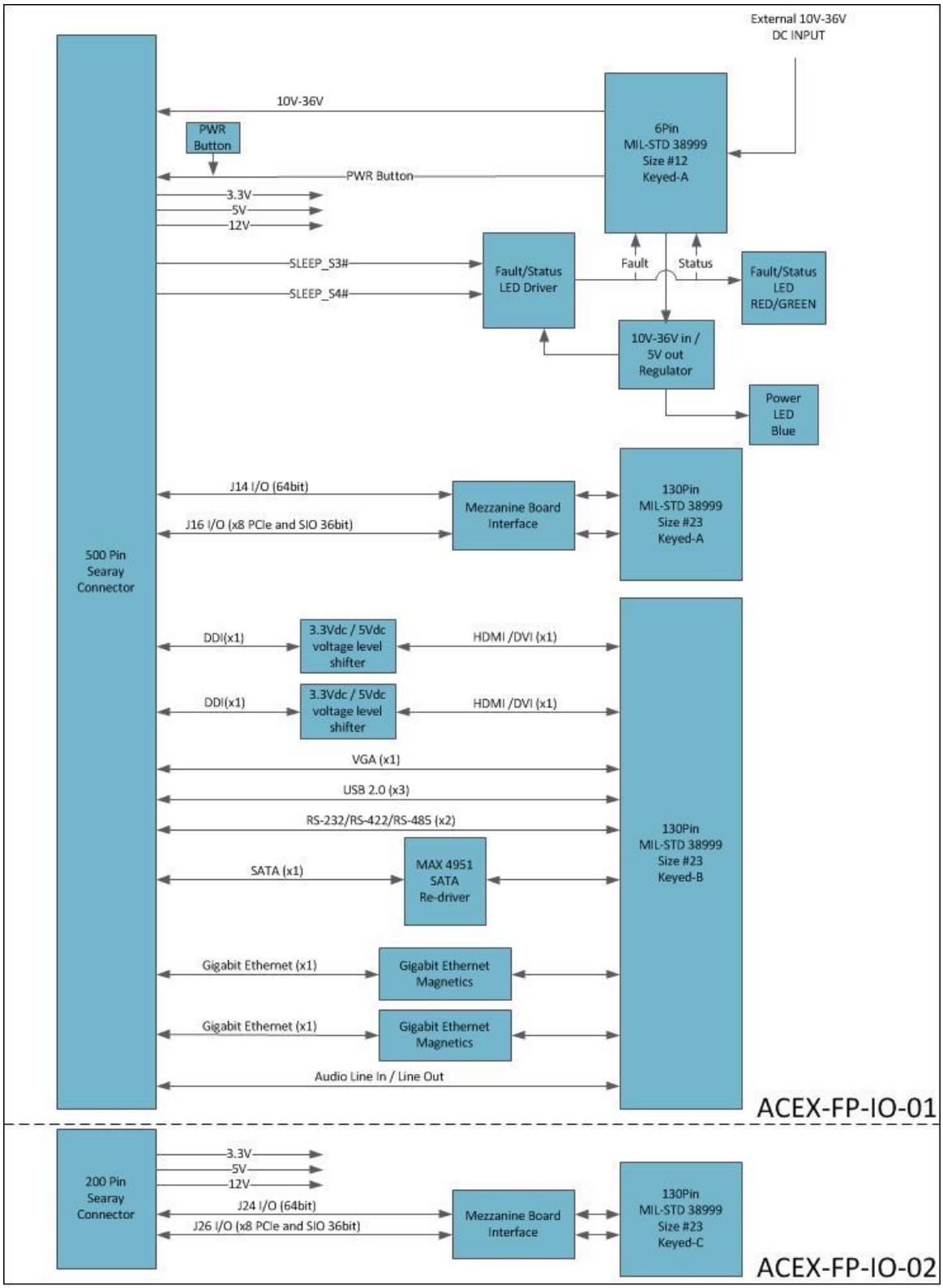
Upon receipt of this product, inspect the shipping carton for evidence of mishandling during transit. If the shipping carton is badly damaged or water stained, request that the carrier's agent be present when the carton is opened. If the carrier's agent is absent when the carton is opened and the contents of the carton are damaged, keep the carton and packing material for the agent's inspection.

For repairs to a product damaged in shipment, refer to the Acromag Service Policy to obtain return instructions. It is suggested that salvageable shipping cartons and packing material be saved for future use in the event the product must be shipped.

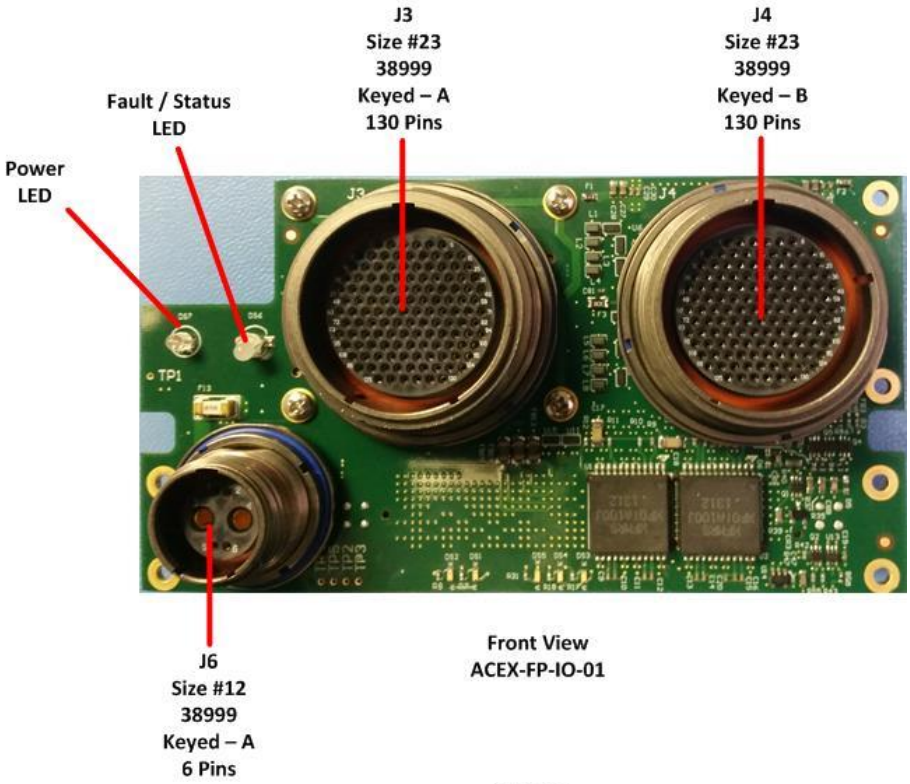
This board is physically protected with packing material and electrically protected with an anti-static bag during shipment. However, it is recommended that the board be visually inspected for evidence of mishandling prior to applying power.

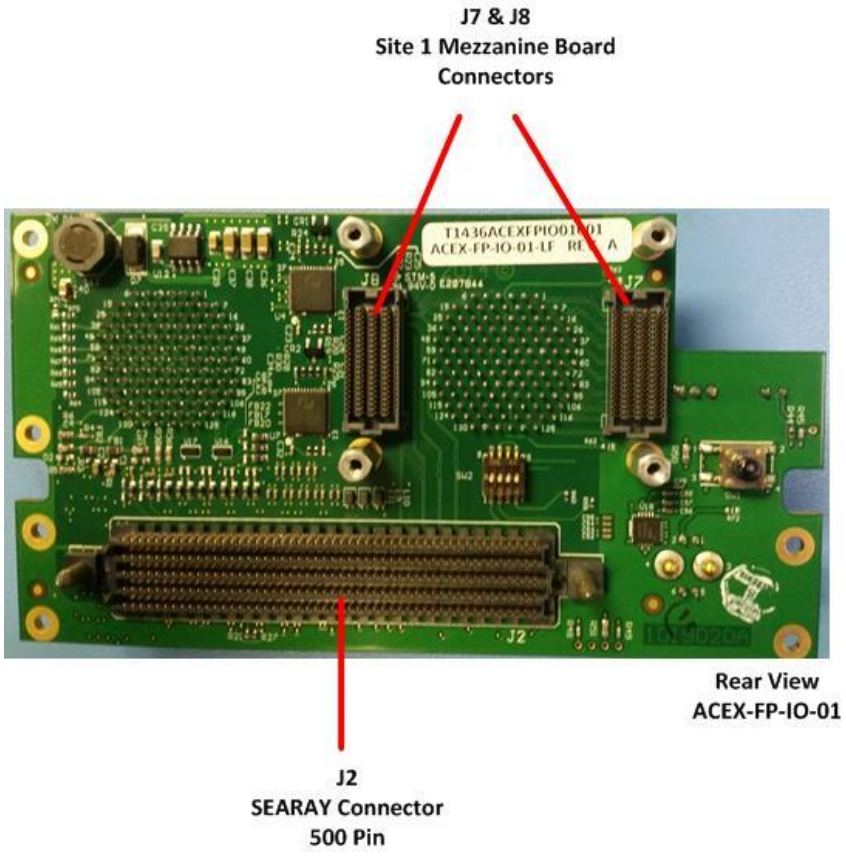
4.0 Operation

Operational Block Diagram

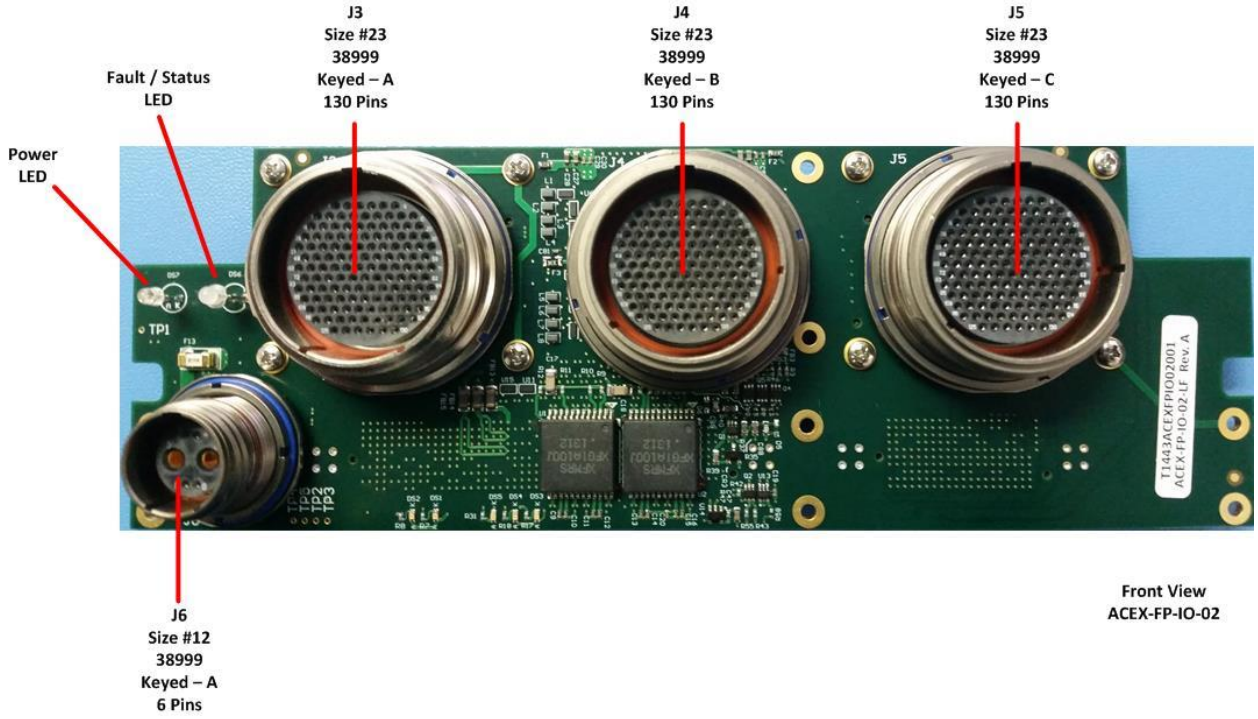


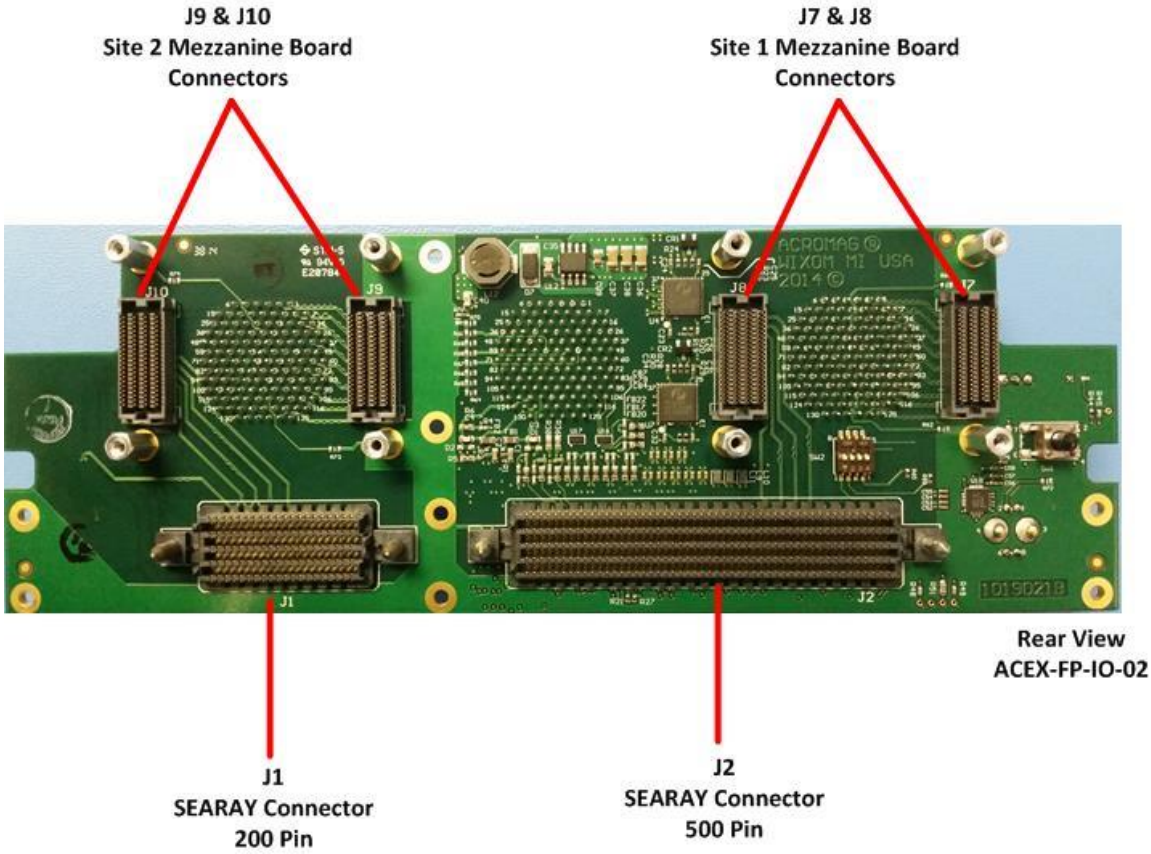
ACEX-FP-IO-01 – Board layout





ACEX-FP-IO-02 – Board layout

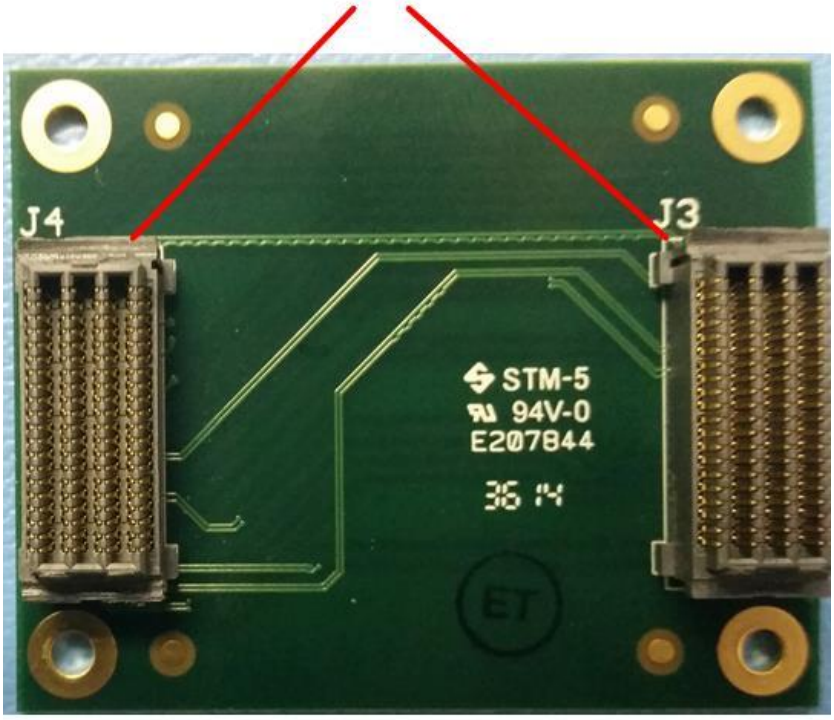




ACEX-IO – Board layout

Front View
ACEX-IO

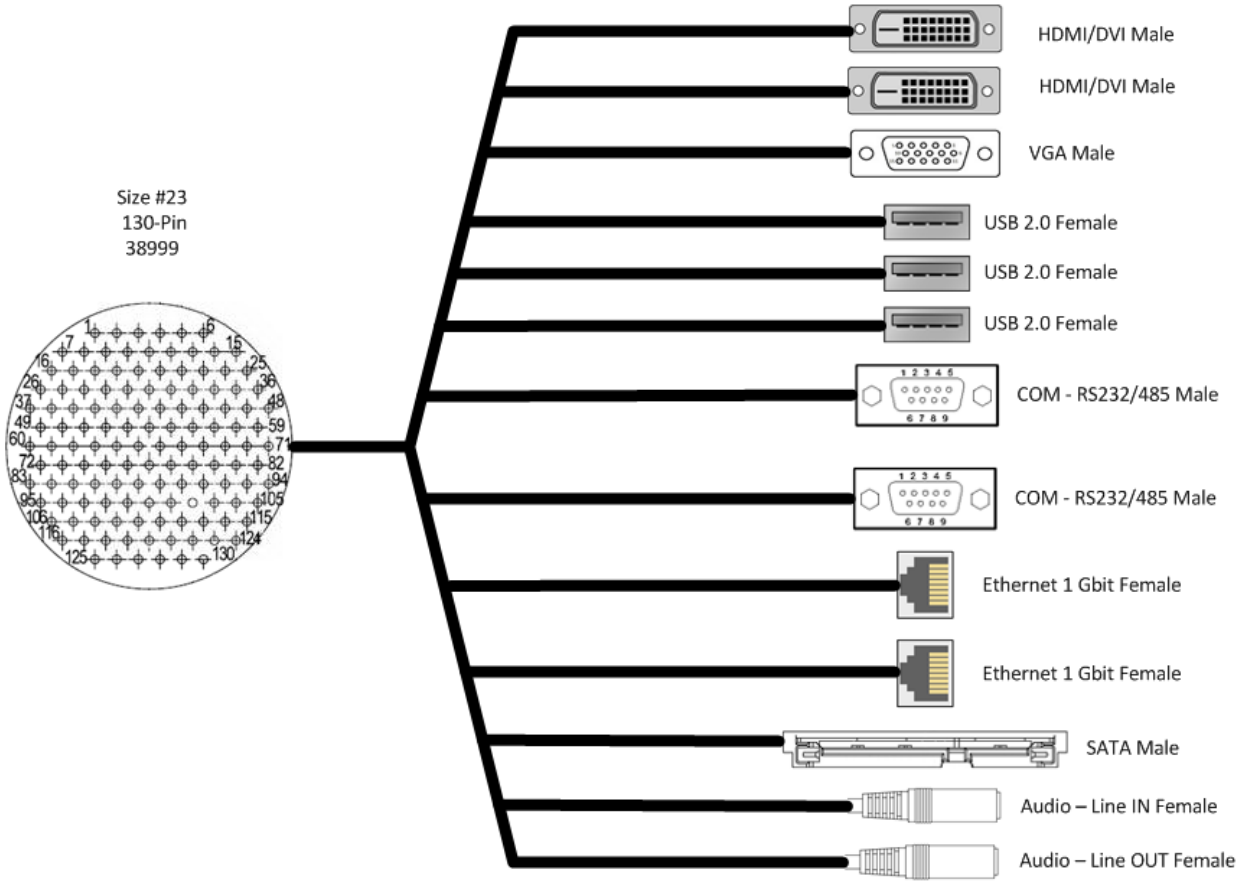
J3 & J4
Mezzanine Board
Connectors



Rear View
ACEX-IO

J3 is a 130-pin size #23 38999 type connector, keyed – A. This connector provides access to the Rear I/O coming from the PMC/XMC site on the carrier board (ACEX-46xx). If a PMC P4/J4 connector is used/installed in site 1 on the carrier board than all 32 differential Pairs of Rear I/O signals are available thru J3. If an XMC card P15 connector is used/installed in site 1 of the carrier board than the UD (user defined signals) Row C and F of the XMC boards P16 connector as defined in VITA 42.0 signals are available.

J4 is a 130-pin size #23 38999 type connector, keyed – B. This connector provides the following standard peripheral I/O as shown below. Optional cable 5028-556 is available.



J5 is a 130-pin size #23 38999 type connector, Keyed – C. This connector provides access to the Rear I/O coming from the PMC/XMC site on the carrier board (ACEX-46xx). If a PMC P4/J4 connector is used/installed in site 2 on the carrier board than all 32 differential Pairs of Rear I/O signals are available thru J3. If an XMC card P15 connector is used/installed in site 2 of the carrier board than the UD (user defined signals) Row C and F of the XMC boards P16 connector as defined in VITA 42.0 signals are available.

J6 is a 6-pin size #12 38999 type connector, keyed - A. This connector is used to provide External input power 10V to 36VDC to the Carrier (ACEX-46xx). This connector also provides PWR_BTN line to allow the user to use a power switch. Optional cable 5028-557 is available.

J7 and J8 are high-density connectors that provide the mezzanine board interface for 38999 connector J3. The PMC/XMC Rear I/O signals from Site 1 on the carrier board (ACEX-46xx) are routed up to the mezzanine interface on J8 and then back down on J7 before being sent out the 38999 connector J3. The ACEX-FP-IO-0x boards require the use of a mezzanine board on J7/J8 in order to provide connections for the signals being routed to the 38999 connector J3. A "pass-through" mezzanine board is included on standard models that allow the PMC/XMC Rear I/O signals to be routed directly out the 38999 connector J3. A design kit for developing custom mezzanine boards is available upon request.

J9 and J10 are high-density connectors that provide the mezzanine board interface for 38999 connector J5. The PMC/XMC Rear I/O signals from Site 2 on the carrier board (ACEX-46xx) are routed up to the mezzanine interface on J10 and then back down on J9 before being sent out the 38999 connector J5. The ACEX-FP-IO-0x boards require the use of a mezzanine board on J9/J10 in order to provide connections for the signals being routed to the 38999 connector J5. A "pass-through" mezzanine board is included on standard models that allow the PMC/XMC Rear I/O signals to be routed directly out the 38999 connector J5. A design kit for developing custom mezzanine boards is available upon request.

Mezzanine Board Interface

The ACEX-FP-IO-0x boards require the use of a mezzanine board on J7/J8 and J9/J10 in order to provide connections for the signals being routed to the corresponding 38999 connectors J3 and J5, respectively. On standard models, a "pass-through" mezzanine board is included for each of the mezzanine board sites on the ACEX-FP-IO-0x boards. The "pass-through" mezzanine board simply routes the PMC/XMC Rear I/O signals straight through to the 38999 connector. The "pass-through" mezzanine board is designed to be interchangeable between the two mezzanine board sites.

In addition to the core set of PMC/XMC Rear I/O signals that are identical between the two sites, there are a set of signals unique to each of the mezzanine board sites. On the J7/J8 mezzanine board (Site 1) there are a variety of miscellaneous signals are available for use on custom mezzanine boards. These include PCIe lanes, a SATA interface, GPIO signals, and I2C Bus lines. On the J9/J10 mezzanine board (Site 2) the additional pins are used to bring up the rest of the PMC/XMC Rear I/O signals for use on custom mezzanine boards.

Power LED
The Blue Power LED indicates DC 10V-36V power is applied at the external power input.

Status LED
The Status LED is Bi-color (RED/GREEN) LED that is used to show the status of the system power state S3 and S4.

System Power State S3 the Sleep state:
All power is off except memory. If power is removed at this point you will lose your current session.

System Power State S4 the Hibernate state:
Safe to remove power, will always resume the current session when power is reapplied.

S3# and S4# are active low signals (# indicates active low). There are three basic states indicated by the Status LED:

- Status LED steady "Green On" when the system is running.
- Status LED "Blink Green" when the system enters sleep state S3.
- Status LED will turn off when the system enters Sleep state S4 Hibernate.

Note: It is ok to remove power from the system when the Status LED is off.

Signal Activity		**Status LED**		
Sleep S3#	**Sleep S4#**	Green On	Blink Green	LED Off
0	0			✓
0	1		✓	
1	1	✓		

✓ - Condition of the Status LED
0 - Represents a Low state
1 - Represents a High state

Note: S5 State is not monitored by the LED however the Status LED will go off during a S5 or shutdown condition.

SW2 – Reserved
SW2 is reserved for future use.

SW2 - Bold indicates default factory settings		
SW2 - 1	ON	Reserved
	OFF	**Normal operation**
SW2 - 2	ON	Reserved
	OFF	**Normal operation**
SW2 - 3	ON	Reserved
	OFF	**Normal operation**
SW2 - 4	ON	Reserved
	OFF	**Normal operation**

5.0 Connector Pin-out

J1 (200 – Pin SEARAY Connector)

Signal Name	Description	SEARAY Pin
VCC_5V_IN	5V Input Voltage	A1
J24_RIO3_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO3+"	A2
J24_RIO3_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO3-"	A3
J24_RIO7_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO7+"	A4
J24_RIO7_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO7-"	A5
J24_RIO10_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO10+"	A6
J24_RIO10_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO10-"	A7
J24_RIO14_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO14+"	A8
J24_RIO14_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO14-"	A9
J24_RIO17_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO17+"	A10
J24_RIO17_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO17-"	A11
J24_RIO21_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO21+"	A12
J24_RIO21_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO21-"	A13
J24_RIO24_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO24+"	A14
J24_RIO24_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO24-"	A15
J24_RIO28_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO28+"	A16
J24_RIO28_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO28-"	A17
J24_RIO31_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO31+"	A18
J24_RIO31_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO31-"	A19
EXT_PWR_OUT	External Output Power	A20
J24_RIO1_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO1+"	B1
J24_RIO1_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO1-"	B2
J24_RIO5_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO5+"	B3
J24_RIO5_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO5-"	B4
J24_RIO8_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO8+"	B5
J24_RIO8_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO8-"	B6
J24_RIO12_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO12+"	B7
J24_RIO12_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO12-"	B8
J24_RIO15_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO15+"	B9
J24_RIO15_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO15-"	B10
J24_RIO19_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO19+"	B11
J24_RIO19_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO19-"	B12
J24_RIO22_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO22+"	B13
J24_RIO22_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO22-"	B14
J24_RIO26_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO26+"	B15
J24_RIO26_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO26-"	B16

J24_RIO29_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO29+"	B17
J24_RIO29_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO29-"	B18
RSVD	Reserved	B19
EXT_PWR_OUT	External Output Power	B20
VCC_3.3V_IN	3.3V Input Voltage	C1
J24_RIO2_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO2+"	C2
J24_RIO2_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO2-"	C3
J24_RIO6_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO6+"	C4
J24_RIO6_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO6-"	C5
J24_RIO9_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO9+"	C6
J24_RIO9_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO9-"	C7
J24_RIO13_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO13+"	C8
J24_RIO13_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO13-"	C9
J24_RIO16_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO16+"	C10
J24_RIO16_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO16-"	C11
J24_RIO20_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO20+"	C12
J24_RIO20_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO20-"	C13
J24_RIO23_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO23+"	C14
J24_RIO23_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO23-"	C15
J24_RIO27_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO27+"	C16
J24_RIO27_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO27-"	C17
J24_RIO30_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO30+"	C18
J24_RIO30_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO30-"	C19
VCC_12V_IN	12V Input Voltage	C20
J24_RIO0_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO0+"	D1
J24_RIO0_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO0-"	D2
J24_RIO4_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO4+"	D3
J24_RIO4_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO4-"	D4
J26_SIO4_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO4+"	D5
J26_SIO4_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO4-"	D6
J24_RIO11_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO11+"	D7
J24_RIO11_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO11-"	D8
J26_SIO8_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO8+"	D9
J26_SIO8_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO8-"	D10
J24_RIO18_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO18+"	D11
J24_RIO18_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO18-"	D12
J26_SIO12_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO12+"	D13
J26_SIO12_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO12-"	D14
J24_RIO25_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO25+"	D15
J24_RIO25_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO25-"	D16
J26_SIO16_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO16+"	D17

J26_SIO16_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO16-"	D18
RSVD	Reserved	D19
VCC_12V_IN	12V Input Voltage	D20
VCC_3.3V_IN	3.3V Input Voltage	E1
J26_SIO1_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO1+"	E2
J26_SIO1_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO1-"	E3
J26_SIO3_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO3+"	E4
J26_SIO3_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO3-"	E5
J26_SIO5_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO5+"	E6
J26_SIO5_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO5-"	E7
J26_SIO7_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO7+"	E8
J26_SIO7_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO7-"	E9
J26_SIO9_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO9+"	E10
J26_SIO9_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO9-"	E11
J26_SIO11_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO11+"	E12
J26_SIO11_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO11-"	E13
J26_SIO13_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO13+"	E14
J26_SIO13_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO13-"	E15
J26_SIO15_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO15+"	E16
J26_SIO15_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO15-"	E17
J26_SIO17_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO17+"	E18
J26_SIO17_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO17-"	E19
VCC_5V_IN	5V Input Voltage	E20
J26_SIO0_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO0+"	F1
J26_SIO0_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO0-"	F2
GND	Ground	F3
GND	Ground	F4
J26_SIO2_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO2+"	F5
J26_SIO2_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO2-"	F6
GND	Ground	F7
GND	Ground	F8
J26_SIO6_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO6+"	F9
J26_SIO6_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO6-"	F10
GND	Ground	F11
GND	Ground	F12
J26_SIO10_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO10+"	F13
J26_SIO10_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO10-"	F14
GND	Ground	F15
GND	Ground	F16
J26_SIO14_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO14+"	F17
J26_SIO14_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO14-"	F18

J26_SIO18_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO18+"	F19
J26_SIO18_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO18-"	F20
GND	Ground	G1
GND	Ground	G2
J26_DP17_N	XMC Site 2 Rear I/O Differential Pair "J26_DP17-"	G3
J26_DP17_P	XMC Site 2 Rear I/O Differential Pair "J26_DP17+"	G4
GND	Ground	G5
GND	Ground	G6
J26_DP13_N	XMC Site 2 Rear I/O Differential Pair "J26_DP13-"	G7
J26_DP13_P	XMC Site 2 Rear I/O Differential Pair "J26_DP13+"	G8
GND	Ground	G9
GND	Ground	G10
J26_DP09_N	XMC Site 2 Rear I/O Differential Pair "J26_DP09-"	G11
J26_DP09_P	XMC Site 2 Rear I/O Differential Pair "J26_DP09+"	G12
GND	Ground	G13
GND	Ground	G14
J26_DP05_N	XMC Site 2 Rear I/O Differential Pair "J26_DP05-"	G15
J26_DP05_P	XMC Site 2 Rear I/O Differential Pair "J26_DP05+"	G16
GND	Ground	G17
GND	Ground	G18
J26_DP01_N	XMC Site 2 Rear I/O Differential Pair "J26_DP01-"	G19
J26_DP01_P	XMC Site 2 Rear I/O Differential Pair "J26_DP01+"	G20
J26_DP19_N	XMC Site 2 Rear I/O Differential Pair "J26_DP19-"	H1
J26_DP19_P	XMC Site 2 Rear I/O Differential Pair "J26_DP19+"	H2
GND	Ground	H3
GND	Ground	H4
J26_DP15_N	XMC Site 2 Rear I/O Differential Pair "J26_DP15-"	H5
J26_DP15_P	XMC Site 2 Rear I/O Differential Pair "J26_DP15+"	H6
GND	Ground	H7
GND	Ground	H8
J26_DP11_N	XMC Site 2 Rear I/O Differential Pair "J26_DP11-"	H9
J26_DP11_P	XMC Site 2 Rear I/O Differential Pair "J26_DP11+"	H10
GND	Ground	H11
GND	Ground	H12
J26_DP07_N	XMC Site 2 Rear I/O Differential Pair "J26_DP07-"	H13
J26_DP07_P	XMC Site 2 Rear I/O Differential Pair "J26_DP07+"	H14
GND	Ground	H15
GND	Ground	H16
J26_DP03_N	XMC Site 2 Rear I/O Differential Pair "J26_DP03-"	H17
J26_DP03_P	XMC Site 2 Rear I/O Differential Pair "J26_DP03+"	H18
GND	Ground	H19

GND	Ground	H20
GND	Ground	J1
GND	Ground	J2
J26_DP16_N	XMC Site 2 Rear I/O Differential Pair "J26_DP16-"	J3
J26_DP16_P	XMC Site 2 Rear I/O Differential Pair "J26_DP16+"	J4
GND	Ground	J5
GND	Ground	J6
J26_DP12_N	XMC Site 2 Rear I/O Differential Pair "J26_DP12-"	J7
J26_DP12_P	XMC Site 2 Rear I/O Differential Pair "J26_DP12+"	J8
GND	Ground	J9
GND	Ground	J10
J26_DP08_N	XMC Site 2 Rear I/O Differential Pair "J26_DP08-"	J11
J26_DP08_P	XMC Site 2 Rear I/O Differential Pair "J26_DP08+"	J12
GND	Ground	J13
GND	Ground	J14
J26_DP04_N	XMC Site 2 Rear I/O Differential Pair "J26_DP04-"	J15
J26_DP04_P	XMC Site 2 Rear I/O Differential Pair "J26_DP04+"	J16
GND	Ground	J17
GND	Ground	J18
J26_DP00_N	XMC Site 2 Rear I/O Differential Pair "J26_DP00-"	J19
J26_DP00_P	XMC Site 2 Rear I/O Differential Pair "J26_DP00+"	J20
J26_DP18_N	XMC Site 2 Rear I/O Differential Pair "J26_DP18-"	K1
J26_DP18_P	XMC Site 2 Rear I/O Differential Pair "J26_DP18+"	K2
GND	Ground	K3
GND	Ground	K4
J26_DP14_N	XMC Site 2 Rear I/O Differential Pair "J26_DP14-"	K5
J26_DP14_P	XMC Site 2 Rear I/O Differential Pair "J26_DP14+"	K6
GND	Ground	K7
GND	Ground	K8
J26_DP10_N	XMC Site 2 Rear I/O Differential Pair "J26_DP10-"	K9
J26_DP10_P	XMC Site 2 Rear I/O Differential Pair "J26_DP10+"	K10
GND	Ground	K11
GND	Ground	K12
J26_DP06_N	XMC Site 2 Rear I/O Differential Pair "J26_DP06-"	K13
J26_DP06_P	XMC Site 2 Rear I/O Differential Pair "J26_DP06+"	K14
GND	Ground	K15
GND	Ground	K16
J26_DP02_N	XMC Site 2 Rear I/O Differential Pair "J26_DP02-"	K17
J26_DP02_P	XMC Site 2 Rear I/O Differential Pair "J26_DP02+"	K18
GND	Ground	K19
GND	Ground	K20

J2 (500 – Pin SEARAY Connector)

Signal Name	Description	SEARAY Pin
GND	Ground	A1
J14_RIO19_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO19-"	A2
J14_RIO19_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO19+"	A3
J14_RIO24_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO24+"	A4
J14_RIO24_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO24-"	A5
J14_RIO20_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO20-"	A6
J14_RIO20_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO20+"	A7
J14_RIO21_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO21-"	A8
J14_RIO21_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO21+"	A9
J14_RIO23_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO23+"	A10
J14_RIO23_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO23-"	A11
J14_RIO25_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO25+"	A12
J14_RIO25_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO25-"	A13
J14_RIO27_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO27+"	A14
J14_RIO27_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO27-"	A15
J14_RIO29_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO29+"	A16
J14_RIO29_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO29-"	A17
J14_RIO31_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO31+"	A18
J14_RIO31_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO31-"	A19
VCC_12V_IN	12V Input Voltage	A20
USB0_+5V	USB0 Positive 5V from Carrier	A21
FAN_TACH	CPU Fan TACH Input	A22
FAN_PWM	CPU Fan Speed Control	A23
PLT_RST#	Platform Reset Signal	A24
USB3_+5V	USB3 Positive 5V from Carrier	A25
EDP_HPD	eDP Hot Plug Detect	A26
EDP_BKLTCTL	eDP Backlight Brightness Control	A27
EDP_BKLTEN	eDP Backlight Enable	A28
USB4_+5V	USB4 Positive 5V from Carrier	A29
EXT_PWR_OUT	External Output Power	A30
EXT_PWR_OUT	External Output Power	A31
EXT_PWR_OUT	External Output Power	A32
EXT_PWR_OUT	External Output Power	A33
EXT_PWR_OUT	External Output Power	A34
EXT_PWR_OUT	External Output Power	A35
EXT_PWR_OUT	External Output Power	A36
EXT_PWR_OUT	External Output Power	A37
EXT_PWR_OUT	External Output Power	A38

EXT_PWR_OUT	External Output Power	A39
VCC_5V_IN	5V Input Voltage	A40
GND	Ground	A41
LINE-OUT_R	Right Channel Audio Line Out from CODEC on Carrier	A42
AUDIO_GND	AUDIO_GND connected to Digital GND near CODEC on Carrier	A43
LINE-IN_R	Right Channel Audio Line In from CODEC on Carrier	A44
LINE-IN_L	Left Channel Audio Line In from CODEC on Carrier	A45
GND	Ground	A46
GBE0_MDI3_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Positive	A47
GBE0_MDI3_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Negative	A48
GBE1_MDI3_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Positive	A49
GBE1_MDI3_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Negative	A50
J14_RIO18_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO18-"	B1
J14_RIO18_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO18+"	B2
J14_RIO14_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO14+"	B3
J14_RIO14_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO14-"	B4
J14_RIO7_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO7-"	B5
J14_RIO7_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO7+"	B6
J14_RIO10_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO10-"	B7
J14_RIO10_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO10+"	B8
J14_RIO6_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO6-"	B9
J14_RIO6_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO6+"	B10
J14_RIO17_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO17+"	B11
J14_RIO17_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO17-"	B12
J14_RIO22_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO22+"	B13
J14_RIO22_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO22-"	B14
J14_RIO26_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO26+"	B15
J14_RIO26_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO26-"	B16
J14_RIO8_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO8+"	B17
J14_RIO8_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO8-"	B18
GPI_2	General Purpose Input 2	B19
GPI_3	General Purpose Input 3	B20
USB0_P	USB0 Differential Pair - "USB0+"	B21
USB0_N	USB0 Differential Pair - "USB0-"	B22
GPO_0	General Purpose Output 0	B23
GPO_1	General Purpose Output 1	B24
USB3_P	USB3 Differential Pair - "USB3+"	B25
USB3_N	USB3 Differential Pair - "USB3-"	B26
GND	Ground	B27
GND	Ground	B28
USB4_P	USB4 Differential Pair - "USB4+"	B29

USB4_N	USB4 Differential Pair - "USB4-"	B30
USB5_+5V	USB5 Positive 5V from Carrier	B31
DPC_AUX_SEL	Digital Display Interface 2 - AUX Function Select	B32
UART_TX0_P	General Purpose Serial Port 0 from Carrier Transmitter Positive	B33
UART_TX0_N	General Purpose Serial Port 0 from Carrier Transmitter Negative	B34
UART_RX0_P	General Purpose Serial Port 0 from Carrier Receiver Positive	B35
UART_RX0_N	General Purpose Serial Port 0 from Carrier Receiver Negative	B36
UART_TX1_P	General Purpose Serial Port 1 from Carrier Transmitter Positive	B37
UART_TX1_N	General Purpose Serial Port 1 from Carrier Transmitter Negative	B38
UART_RX1_P	General Purpose Serial Port 1 from Carrier Receiver Positive	B39
UART_RX1_N	General Purpose Serial Port 1 from Carrier Receiver Negative	B40
VCC_3.3V_IN	3.3V Input Voltage	B41
LINE-OUT_L	Left Channel Audio Line Out from CODEC on Carrier	B42
VGA_BLU	Analog Video Output Blue	B43
VGA_RED	Analog Video Output Red	B44
VGA_GRN	Analog Video Output Green	B45
GND	Ground	B46
GBE0_MDI2_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Positive	B47
GBE0_MDI2_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Negative	B48
GBE1_MDI2_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Positive	B49
GBE1_MDI2_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Negative	B50
WDTO	Watchdog Timer Output	C1
J14_RIO13_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO13-"	C2
J14_RIO13_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO13+"	C3
J14_RIO9_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO9-"	C4
J14_RIO9_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO9+"	C5
J14_RIO5_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO5-"	C6
J14_RIO5_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO5+"	C7
J14_RIO1_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO1-"	C8
J14_RIO1_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO1+"	C9
J14_RIO2_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO2-"	C10
J14_RIO2_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO2+"	C11
J14_RIO28_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO28+"	C12
J14_RIO28_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO28-"	C13
J14_RIO12_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO12-"	C14
J14_RIO12_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO12+"	C15
J14_RIO4_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO4+"	C16
J14_RIO4_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO4-"	C17
J14_RIO30_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO30+"	C18
J14_RIO30_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO30-"	C19
GPI_1	General Purpose Input 1	C20

USB1_+5V	USB1 Positive 5V from Carrier	C21
EDP_VDDEN	eDP Power Enable	C22
EDP_TX3_N	eDP Differential Pair 3 Negative	C23
EDP_TX3_P	eDP Differential Pair 3 Positive	C24
GND	Ground	C25
GND	Ground	C26
DPC_TX3_N	Digital Display Interface 2 - Output Differential Pair 3 Negative	C27
DPC_TX3_P	Digital Display Interface 2 - Output Differential Pair 3 Positive	C28
GND	Ground	C29
GND	Ground	C30
USB5_P	USB5 Differential Pair - "USB5+"	C31
USB5_N	USB5 Differential Pair - "USB5-"	C32
DPC_HPD	Digital Display Interface 2 - Hot Plug Detect	C33
THRMTRIP3#	Output Signal Indicating CPU Entered Thermal Shutdown	C34
SPKR	Audio Enunciator Output - PC Beep Signal	C35
BATLOW#	Low Battery Indicator for External Battery	C36
SUS_STAT#	Imminent Suspend Operation Indicator - Notifies LPC Devices	C37
VCC_5V_IN	5V Input Voltage	C38
VCC_5V_IN	5V Input Voltage	C39
SATA_ACT#	ATA (Parallel and Serial) or SAS Activity Indicator Signal	C40
VCC_3.3V_IN	3.3V Input Voltage	C41
GND	Ground	C42
GND	Ground	C43
GND	Ground	C44
GND	Ground	C45
VGA_I2C_DAT	Display Data Channel (DDC) Data Line	C46
GBE0_MDI1_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Positive	C47
GBE0_MDI1_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Negative	C48
GBE1_MDI1_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Positive	C49
GBE1_MDI1_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Negative	C50
J14_RIO15_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO15-"	D1
J14_RIO15_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO15+"	D2
J14_RIO11_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO11-"	D3
J14_RIO11_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO11+"	D4
J16_SIO1_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO1-"	D5
J16_SIO1_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO1+"	D6
J14_RIO3_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO3-"	D7
J14_RIO3_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO3+"	D8
J16_SIO8_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO8+"	D9
J16_SIO8_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO8-"	D10
J14_RIO16_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO16-"	D11

J14_RIO16_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO16+"	D12
J16_SIO12_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO12+"	D13
J16_SIO12_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO12-"	D14
J14_RIO0_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO0-"	D15
J14_RIO0_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO0+"	D16
J16_SIO16_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO16+"	D17
J16_SIO16_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO16-"	D18
GPI_0	General Purpose Input 0	D19
GPO_3	General Purpose Output 3	D20
USB1_P	USB1 Differential Pair - "USB1+"	D21
USB1_N	USB1 Differential Pair - "USB1-"	D22
GND	Ground	D23
GND	Ground	D24
EDP_TX1_N	eDP Differential Pair 1 Negative	D25
EDP_TX1_P	eDP Differential Pair 1 Positive	D26
GND	Ground	D27
GND	Ground	D28
DPC_TX0_N	Digital Display Interface 2 - Output Differential Pair 0 Negative	D29
DPC_TX0_P	Digital Display Interface 2 - Output Differential Pair 0 Positive	D30
GND	Ground	D31
GND	Ground	D32
DPD_AUX_SEL	Digital Display Interface 3 - AUX Function Select	D33
DPD_HPD	Digital Display Interface 3 - Hot Plug Detect	D34
COM_THRM#	Off-Module Temp Sensor Input Signal Indicating Over-Temp Condition	D35
DPB_AUX_SEL	Digital Display Interface 1 - AUX Function Select	D36
DPB_HPD	Digital Display Interface 1 - Hot Plug Detect	D37
SLP_S5#	Output Signal Indicating Soft Off State	D38
SLP_S4#	Output Signal Indicating Suspend to Disk State	D39
SLP_S3#	Output Signal Indicating Suspend to RAM State	D40
LPC_DRQ1#	LPC Serial DMA Request Signal 1	D41
LPC_DRQ0#	LPC Serial DMA Request Signal 0	D42
VCC_3.3V_IN	3.3V Input Voltage	D43
VGA_VSYNC	VGA Output Vertical Sync	D44
VGA_HSYNC	VGA Output Horizontal Sync	D45
VGA_I2C_CK	Display Data Channel (DDC) Clock Line	D46
GBE0_MDI0_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Positive	D47
GBE0_MDI0_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Negative	D48
GBE1_MDI0_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Positive	D49
GBE1_MDI0_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Negative	D50
SYSRST#	System Reset Signal	E1
J16_SIO2_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO2-"	E2

J16_SIO2_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO2+"	E3
J16_SIO3_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO3+"	E4
J16_SIO3_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO3-"	E5
J16_DP16_N	XMC Site 1 Rear I/O Differential Pair "J16_DP16-"	E6
J16_DP16_P	XMC Site 1 Rear I/O Differential Pair "J16_DP16+"	E7
J16_DP19_P	XMC Site 1 Rear I/O Differential Pair "J16_DP19+"	E8
J16_DP19_N	XMC Site 1 Rear I/O Differential Pair "J16_DP19-"	E9
J16_SIO9_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO9+"	E10
J16_SIO9_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO9-"	E11
J16_SIO0_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO0+"	E12
J16_SIO0_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO0-"	E13
J16_SIO13_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO13+"	E14
J16_SIO13_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO13-"	E15
J16_SIO15_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO15+"	E16
J16_SIO15_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO15-"	E17
J16_SIO17_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO17+"	E18
J16_SIO17_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO17-"	E19
GPO_2	General Purpose Output 2	E20
USB2_+5V	USB2 Positive 5V from Carrier	E21
GND	Ground	E22
EDP_TX0_N	eDP Differential Pair 0 Negative	E23
EDP_TX0_P	eDP Differential Pair 0 Positive	E24
GND	Ground	E25
GND	Ground	E26
DPC_TX2_N	Differential Pair - "DDI2_PAIR2-"	E27
DPC_TX2_P	Differential Pair - "DDI2_PAIR2+"	E28
GND	Ground	E29
GND	Ground	E30
DPC_CTRL_AUX_N	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Negative	E31
DPC_CTRL_AUX_P	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Positive	E32
GND	Ground	E33
GND	Ground	E34
I2C_DAT	General Purpose I2C Port Data I/O Line	E35
I2C_CLK	General Purpose I2C Port Clock Output	E36
GND	Ground	E37
GND	Ground	E38
SMB_DATA	System Management Bus Bidirectional Data Line	E39
SMB_CLK	System Management Bus Bidirectional Clock Line	E40
SMB_ALERT#	System Management Bus Alert Signal	E41
LPC_SERIRQ	LPC Serial Interrupt Signal	E42
LPC_FRAME#	LPC Frame Signal - LPC Cycle Start Indicator	E43

VCC_3.3V_IN	3.3V Input Voltage	E44
LPC_AD1	LPC Multiplexed Address - Command and Data Bus 1	E45
LPC_AD0	LPC Multiplexed Address - Command and Data Bus 0	E46
GBE0_L1000#	Gigabit Ethernet Controller 0 from Module - 1000 Mb/s Link Indicator	E47
GBE1_1V9	External 1.9V Reference Voltage from Carrier for Gigabit Ethernet Controller 1	E48
GBE0_LINK#	Gigabit Ethernet Controller 0 from Module - Link Indicator	E49
GBE1_LINK#	Gigabit Ethernet Controller 1 from Carrier - Link Indicator	E50
J16_DP17_N	XMC Site 1 Rear I/O Differential Pair "J16_DP17-"	F1
J16_DP17_P	XMC Site 1 Rear I/O Differential Pair "J16_DP17+"	F2
GND	Ground	F3
GND	Ground	F4
J16_DP11_N	XMC Site 1 Rear I/O Differential Pair "J16_DP11-"	F5
J16_DP11_P	XMC Site 1 Rear I/O Differential Pair "J16_DP11+"	F6
GND	Ground	F7
GND	Ground	F8
J16_DP07_N	XMC Site 1 Rear I/O Differential Pair "J16_DP07-"	F9
J16_DP07_P	XMC Site 1 Rear I/O Differential Pair "J16_DP07+"	F10
GND	Ground	F11
GND	Ground	F12
J16_SIO10_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO10+"	F13
J16_SIO10_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO10-"	F14
GND	Ground	F15
GND	Ground	F16
J16_DP02_N	XMC Site 1 Rear I/O Differential Pair "J16_DP02-"	F17
J16_DP02_P	XMC Site 1 Rear I/O Differential Pair "J16_DP02+"	F18
J16_DP00_N	XMC Site 1 Rear I/O Differential Pair "J16_DP00-"	F19
J16_DP00_P	XMC Site 1 Rear I/O Differential Pair "J16_DP00+"	F20
USB2_P	USB2 Differential Pair - "USB2+"	F21
USB2_N	USB2 Differential Pair - "USB2-"	F22
GND	Ground	F23
GND	Ground	F24
EDP_TX2_N	eDP Differential Pair 2 Negative	F25
EDP_TX2_P	eDP Differential Pair 2 Positive	F26
GND	Ground	F27
GND	Ground	F28
DPC_TX1_N	Digital Display Interface 2 - Output Differential Pair 1 Negative	F29
DPC_TX1_P	Digital Display Interface 2 - Output Differential Pair 1 Positive	F30
GND	Ground	F31
GND	Ground	F32
DPD_CTRL_AUX_N	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Negative	F33
DPD_CTRL_AUX_P	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Positive	F34

GND	Ground	F35
GND	Ground	F36
DPB_CTRL_AUX_N	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Negative	F37
DPB_CTRL_AUX_P	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Positive	F38
GND	Ground	F39
GND	Ground	F40
PWRBTN#	Power Button Input Signal	F41
LPC_CLK	LPC Clock Output - 33MHz Nominal	F42
GND	Ground	F43
GND	Ground	F44
LPC_AD3	LPC Multiplexed Address - Command and Data Bus 3	F45
LPC_AD2	LPC Multiplexed Address - Command and Data Bus 2	F46
GND	Ground	F47
GND	Ground	F48
GBE0_ACT#	Gigabit Ethernet Controller 0 from Module - Activity Indicator	F49
GBE1_ACT#	Gigabit Ethernet Controller 1 from Carrier - Activity Indicator	F50
GND	Ground	G1
GND	Ground	G2
J16_SIO5_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO5+"	G3
J16_SIO5_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO5-"	G4
GND	Ground	G5
GND	Ground	G6
J16_DP08_N	XMC Site 1 Rear I/O Differential Pair "J16_DP08-"	G7
J16_DP08_P	XMC Site 1 Rear I/O Differential Pair "J16_DP08+"	G8
GND	Ground	G9
GND	Ground	G10
J16_DP09_N	XMC Site 1 Rear I/O Differential Pair "J16_DP09-"	G11
J16_DP09_P	XMC Site 1 Rear I/O Differential Pair "J16_DP09+"	G12
GND	Ground	G13
GND	Ground	G14
J16_DP05_N	XMC Site 1 Rear I/O Differential Pair "J16_DP05-"	G15
J16_DP05_P	XMC Site 1 Rear I/O Differential Pair "J16_DP05+"	G16
GND	Ground	G17
GND	Ground	G18
J16_DP01_N	XMC Site 1 Rear I/O Differential Pair "J16_DP01-"	G19
J16_DP01_P	XMC Site 1 Rear I/O Differential Pair "J16_DP01+"	G20
WAKE1#	General Purpose Wake Signal	G21
WAKE0#	PCI Express Wake Signal	G22
PCIE0_RX_N	PCI Express Lane 0 Receive Differential Pair Negative	G23
PCIE0_RX_P	PCI Express Lane 0 Receive Differential Pair Positive	G24
GND	Ground	G25

GND	Ground	G26
PCIE2_RX_N	PCI Express Lane 2 Receive Differential Pair Negative	G27
PCIE2_RX_P	PCI Express Lane 2 Receive Differential Pair Positive	G28
GND	Ground	G29
GND	Ground	G30
DPD_TX3_N	Digital Display Interface 3 - Output Differential Pair 3 Negative	G31
DPD_TX3_P	Digital Display Interface 3 - Output Differential Pair 3 Positive	G32
GND	Ground	G33
GND	Ground	G34
DPB_TX3_N	Digital Display Interface 1 - Output Differential Pair 3 Negative	G35
DPB_TX3_P	Digital Display Interface 1 - Output Differential Pair 3 Positive	G36
GND	Ground	G37
GND	Ground	G38
SATA1_RX_N	SATA1 Receive Differential Pair Negative	G39
SATA1_RX_P	SATA1 Receive Differential Pair Positive	G40
GND	Ground	G41
GND	Ground	G42
USB3_SSRX_P	USB3 USB 3.0 SuperSpeed Receive Positive	G43
USB3_SSRX_N	USB3 USB 3.0 SuperSpeed Receive Negative	G44
GND	Ground	G45
GND	Ground	G46
USB1_SSRX_P	USB1 USB 3.0 SuperSpeed Receive Positive	G47
USB1_SSRX_N	USB1 USB 3.0 SuperSpeed Receive Negative	G48
GND	Ground	G49
GND	Ground	G50
J16_DP15_N	XMC Site 1 Rear I/O Differential Pair "J16_DP15-"	H1
J16_DP15_P	XMC Site 1 Rear I/O Differential Pair "J16_DP15+"	H2
GND	Ground	H3
GND	Ground	H4
J16_DP13_N	XMC Site 1 Rear I/O Differential Pair "J16_DP13-"	H5
J16_DP13_P	XMC Site 1 Rear I/O Differential Pair "J16_DP13+"	H6
GND	Ground	H7
GND	Ground	H8
J16_SIO11_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO11+"	H9
J16_SIO11_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO11-"	H10
GND	Ground	H11
GND	Ground	H12
J16_DP04_N	XMC Site 1 Rear I/O Differential Pair "J16_DP04-"	H13
J16_DP04_P	XMC Site 1 Rear I/O Differential Pair "J16_DP04+"	H14
GND	Ground	H15
GND	Ground	H16

J16_SIO6_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO6-"	H17
J16_SIO6_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO6+"	H18
GND	Ground	H19
GND	Ground	H20
EDP_AUX_N	eDP AUX Signal Negative	H21
EDP_AUX_P	eDP AUX Signal Positive	H22
GND	Ground	H23
GND	Ground	H24
PCIE0_TX_N	PCI Express Lane 0 Transmit Differential Pair Negative	H25
PCIE0_TX_P	PCI Express Lane 0 Transmit Differential Pair Positive	H26
GND	Ground	H27
GND	Ground	H28
PCIE2_TX_N	PCI Express Lane 2 Transmit Differential Pair Negative	H29
PCIE2_TX_P	PCI Express Lane 2 Transmit Differential Pair Positive	H30
GND	Ground	H31
GND	Ground	H32
DPD_TX0_N	Digital Display Interface 3 - Output Differential Pair 0 Negative	H33
DPD_TX0_P	Digital Display Interface 3 - Output Differential Pair 0 Positive	H34
GND	Ground	H35
GND	Ground	H36
DPB_TX0_N	Digital Display Interface 1 - Output Differential Pair 0 Negative	H37
DPB_TX0_P	Digital Display Interface 1 - Output Differential Pair 0 Positive	H38
GND	Ground	H39
GND	Ground	H40
SATA1_TX_N	SATA1 Transmit Differential Pair Negative	H41
SATA1_TX_P	SATA1 Transmit Differential Pair Positive	H42
GND	Ground	H43
GND	Ground	H44
USB3_SSTX_P	USB3 USB 3.0 SuperSpeed Transmit Positive	H45
USB3_SSTX_N	USB3 USB 3.0 SuperSpeed Transmit Negative	H46
GND	Ground	H47
GND	Ground	H48
USB1_SSTX_P	USB1 USB 3.0 SuperSpeed Transmit Positive	H49
USB1_SSTX_N	USB1 USB 3.0 SuperSpeed Transmit Negative	H50
GND	Ground	J1
GND	Ground	J2
J16_SIO7_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO7+"	J3
J16_SIO7_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO7-"	J4
GND	Ground	J5
GND	Ground	J6
J16_SIO4_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO4+"	J7

J16_SIO4_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO4-"	J8
GND	Ground	J9
GND	Ground	J10
J16_DP06_N	XMC Site 1 Rear I/O Differential Pair "J16_DP06-"	J11
J16_DP06_P	XMC Site 1 Rear I/O Differential Pair "J16_DP06+"	J12
GND	Ground	J13
GND	Ground	J14
J16_DP03_N	XMC Site 1 Rear I/O Differential Pair "J16_DP03-"	J15
J16_DP03_P	XMC Site 1 Rear I/O Differential Pair "J16_DP03+"	J16
GND	Ground	J17
GND	Ground	J18
J16_DP12_N	XMC Site 1 Rear I/O Differential Pair "J16_DP12-"	J19
J16_DP12_P	XMC Site 1 Rear I/O Differential Pair "J16_DP12+"	J20
GND	Ground	J21
GND	Ground	J22
PCIE1_RX_N	PCI Express Lane 1 Receive Differential Pair Negative	J23
PCIE1_RX_P	PCI Express Lane 1 Receive Differential Pair Positive	J24
GND	Ground	J25
GND	Ground	J26
PCIE3_RX_N	PCI Express Lane 3 Receive Differential Pair Negative	J27
PCIE3_RX_P	PCI Express Lane 3 Receive Differential Pair Positive	J28
GND	Ground	J29
GND	Ground	J30
DPD_TX2_N	Digital Display Interface 3 - Output Differential Pair 2 Negative	J31
DPD_TX2_P	Digital Display Interface 3 - Output Differential Pair 2 Positive	J32
GND	Ground	J33
GND	Ground	J35
DPB_TX2_N	Digital Display Interface 1 - Output Differential Pair 2 Negative	J35
DPB_TX2_P	Digital Display Interface 1 - Output Differential Pair 2 Positive	J36
GND	Ground	J37
GND	Ground	J38
SATA0_RX_N	SATA0 Receive Differential Pair Negative	J39
SATA0_RX_P	SATA0 Receive Differential Pair Positive	J40
GND	Ground	J41
GND	Ground	J42
USB2_SSRX_P	USB2 USB 3.0 SuperSpeed Receive Positive	J43
USB2_SSRX_N	USB2 USB 3.0 SuperSpeed Receive Negative	J44
GND	Ground	J45
GND	Ground	J46
USB0_SSRX_P	USB0 USB 3.0 SuperSpeed Receive Positive	J47
USB0_SSRX_N	USB0 USB 3.0 SuperSpeed Receive Negative	J48

GND	Ground	J49
GND	Ground	J50
J16_DP18_N	XMC Site 1 Rear I/O Differential Pair "J16_DP18-"	K1
J16_DP18_P	XMC Site 1 Rear I/O Differential Pair "J16_DP18+"	K2
GND	Ground	K3
GND	Ground	K4
J16_DP14_N	XMC Site 1 Rear I/O Differential Pair "J16_DP14-"	K5
J16_DP14_P	XMC Site 1 Rear I/O Differential Pair "J16_DP14+"	K6
GND	Ground	K7
GND	Ground	K8
J16_DP10_N	XMC Site 1 Rear I/O Differential Pair "J16_DP10-"	K9
J16_DP10_P	XMC Site 1 Rear I/O Differential Pair "J16_DP10+"	K10
GND	Ground	K11
GND	Ground	K12
J16_SIO14_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO14+"	K13
J16_SIO14_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO14-"	K14
GND	Ground	K15
GND	Ground	K16
J16_SIO18_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO18+"	K17
J16_SIO18_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO18-"	K18
GND	Ground	K19
GND	Ground	K20
CLK_PEG_N	PCIe/PEG Reference Clock Output Negative	K21
CLK_PEG_P	PCIe/PEG Reference Clock Output Positive	K22
GND	Ground	K23
GND	Ground	K24
PCIE1_TX_P	PCI Express Lane 1 Transmit Differential Pair Positive	K25
PCIE1_TX_N	PCI Express Lane 1 Transmit Differential Pair Negative	K26
GND	Ground	K27
GND	Ground	K28
PCIE3_TX_N	PCI Express Lane 3 Transmit Differential Pair Negative	K29
PCIE3_TX_P	PCI Express Lane 3 Transmit Differential Pair Positive	K30
GND	Ground	K31
GND	Ground	K32
DPD_TX1_N	Digital Display Interface 3 - Output Differential Pair 1 Negative	K33
DPD_TX1_P	Digital Display Interface 3 - Output Differential Pair 1 Positive	K34
GND	Ground	K35
GND	Ground	K36
DPB_TX1_N	Digital Display Interface 1 - Output Differential Pair 1 Negative	K37
DPB_TX1_P	Digital Display Interface 1 - Output Differential Pair 1 Positive	K38
GND	Ground	K39

GND	Ground	K40
SATA0_TX_N	SATA0 Transmit Differential Pair Negative	K41
SATA0_TX_P	SATA0 Transmit Differential Pair Positive	K42
GND	Ground	K43
GND	Ground	K44
USB2_SSTX_P	USB2 USB 3.0 SuperSpeed Transmit Positive	K45
USB2_SSTX_N	USB2 USB 3.0 SuperSpeed Transmit Negative	K46
GND	Ground	K47
GND	Ground	K48
USB0_SSTX_P	USB0 USB 3.0 SuperSpeed Transmit Positive	K49
USB0_SSTX_N	USB0 USB 3.0 SuperSpeed Transmit Negative	K50

J3 – Keyed-A (130-Pin size #23 38999 Connector)

PMC/XMC rear I/O from PMC/XMC Site 1 on the carrier (ACEX-46xx)

Pin	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*
1	J14_RIO0_P	**34**	J14_RIO14_P	**67**	J14_RIO26_P	**100**	GND
2	J14_RIO0_N	**35**	J14_RIO14_N	**68**	J14_RIO26_N	**101**	J16_SIO7_P
3	J14_RIO1_P	**36**	GND	**69**	GND	**102**	J16_SIO7_N
4	J14_RIO1_N	**37**	J14_RIO15_P	**70**	J14_RIO27_P	**103**	J16_SIO8_P
5	J14_RIO2_P	**38**	J14_RIO15_N	**71**	J14_RIO27_N	**104**	J16_SIO8_N
6	J14_RIO2_N	**39**	GND	**72**	J14_RIO28_P	**105**	GND
7	J14_RIO3_P	**40**	GND	**73**	J14_RIO28_N	**106**	J16_SIO9_P
8	J14_RIO3_N	**41**	J14_RIO16_P	**74**	GND	**107**	J16_SIO9_N
9	GND	**42**	J14_RIO16_N	**75**	J14_RIO29_P	**108**	J16_SIO10_P
10	J14_RIO4_P	**43**	J14_RIO17_P	**76**	J14_RIO29_N	**109**	J16_SIO10_N
11	J14_RIO4_N	**44**	J14_RIO17_N	**77**	GND	**110**	No Connect
12	GND	**45**	GND	**78**	J14_RIO30_P	**111**	J16_SIO11_P
13	J14_RIO5_P	**46**	GND	**79**	J14_RIO30_N	**112**	J16_SIO11_N
14	J14_RIO5_N	**47**	J14_RIO18_P	**80**	GND	**113**	GND
15	GND	**48**	J14_RIO18_N	**81**	J14_RIO31_P	**114**	J16_SIO12_P
16	J14_RIO6_P	**49**	GND	**82**	J14_RIO31_N	**115**	J16_SIO12_N
17	J14_RIO6_N	**50**	J14_RIO19_P	**83**	GND	**116**	GND
18	J14_RIO7_P	**51**	J14_RIO19_N	**84**	J16_SIO0_GCLK_P	**117**	J16_SIO13_P
19	J14_RIO7_N	**52**	J14_RIO20_P	**85**	J16_SIO0_GCLK_N	**118**	J16_SIO13_N
20	J14_RIO8_P	**53**	J14_RIO20_N	**86**	J16_SIO1_P	**119**	GND
21	J14_RIO8_N	**54**	GND	**87**	J16_SIO1_N	**120**	J16_SIO14_P
22	J14_RIO9_P	**55**	J14_RIO21_P	**88**	J16_SIO2_P	**121**	J16_SIO14_N
23	J14_RIO9_N	**56**	J14_RIO21_N	**89**	J16_SIO2_N	**122**	GND
24	J14_RIO10_P	**57**	J14_RIO22_P	**90**	J16_SIO3_P	**123**	J16_SIO15_P
25	J14_RIO10_N	**58**	J14_RIO22_N	**91**	J16_SIO3_N	**124**	J16_SIO15_N
26	GND	**59**	GND	**92**	J16_SIO4_P	**125**	J16_SIO16_P
27	J14_RIO11_P	**60**	J14_RIO23_P	**93**	J16_SIO4_N	**126**	J16_SIO16_N
28	J14_RIO11_N	**61**	J14_RIO23_N	**94**	GND	**127**	J16_SIO17_P
29	J14_RIO12_P	**62**	J14_RIO24_P	**95**	J16_SIO5_P	**128**	J16_SIO17_N
30	J14_RIO12_N	**63**	J14_RIO24_N	**96**	J16_SIO5_N	**129**	J16_SIO18_GCLK_P
31	No Connect	**64**	GND	**97**	GND	**130**	J16_SIO18_GCLK_N
32	J14_RIO13_P	**65**	J14_RIO25_P	**98**	J16_SIO6_P		
33	J14_RIO13_N	**66**	J14_RIO25_N	**99**	J16_SIO6_N		

J4 – Keyed-B (130-Pin size #23 38999 Connector)

Standard Peripheral I/O Signals

Pin	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*
1	DPB_DDC_CLOCK	**34**	DPC_TMDS_CLOCK_SHIELD	**67**	LAN1 DI3 P	**100**	WDTO
2	DPB_DDC_DATA	**35**	DPC_TMDS_D2_P	**68**	GND	**101**	GND
3	USB0_N	**36**	DPC_TMDS_D2_N	**69**	GND	**102**	GND
4	USB0_P	**37**	DPB_HPD	**70**	+12V (SATA)	**103**	UART_TX1_N
5	DPC_DDC_CLOCK	**38**	DPB_TMDS_D2_SHIELD	**71**	+5V (SATA)	**104**	GND
6	DPC_DDC_DATA	**39**	DPB_TMDS_CLK_P	**72**	LAN0 DI0 N	**105**	+3.3V (SATA)
7	DPB_TMDS_D1_SHIELD	**40**	DPB_TMDS_CLK_N	**73**	LAN0 DI1 N	**106**	VGA RED
8	DPB_TMDS_D0_P	**41**	GND	**74**	LAN0 DI2 N	**107**	VGA GND
9	DPB_TMDS_D0_N	**42**	USB2_GND	**75**	LAN0 DI3 N	**108**	GND
10	USB0_+5V	**43**	USB2_+5V	**76**	LAN1 DI0 N	**109**	GND
11	USB0_GND	**44**	GND	**77**	LAN1 DI1 N	**110**	GND
12	USB1_GND	**45**	DPC_TMDS_CLK_P	**78**	LAN1 DI2 N	**111**	UART_RX0_P
13	DPC_TMDS_D0_P	**46**	DPC_TMDS_CLK_N	**79**	LAN1 DI3 N	**112**	LINE IN R
14	DPC_TMDS_D0_N	**47**	DPC_TMDS_D2_SHIELD	**80**	UART_RX1_P	**113**	AUDIO GND
15	DPC_TMDS_D0_SHIELD	**48**	DPC_HPD	**81**	GND	**114**	LINE OUT R
16	DPB_TMDS_D1_P	**49**	No Connect	**82**	+5V (SATA)	**115**	+3.3V (SATA)
17	DPB_TMDS_D1_N	**50**	No Connect	**83**	GND	**116**	VGA GREEN
18	DPB_TMDS_D0_SHIELD	**51**	No Connect	**84**	VGA GND	**117**	VGA PWR
19	GND	**52**	No Connect	**85**	GND	**118**	VGA HSYNC
20	GND	**53**	No Connect	**86**	SATA0_TX_P	**119**	VGA VSYNC
21	USB1_N	**54**	No Connect	**87**	SATA0_TX_N	**120**	UART_TX0_P
22	USB1_P	**55**	No Connect	**88**	GND	**121**	UART_RX0_N
23	DPC_TMDS_D1_SHIELD	**56**	No Connect	**89**	GND	**122**	LINE IN L
24	DPC_TMDS_D1_P	**57**	GND	**90**	GND	**123**	LINE OUT L
25	DPC_TMDS_D1_N	**58**	GND	**91**	UART_TX1_P	**124**	AUDIO GND
26	DPB_TMDS_D2_P	**59**	+12V (SATA)	**92**	UART_RX1_N	**125**	VGA SDATA
27	DPB_TMDS_D2_N	**60**	LAN0 DI0 P	**93**	+5V (SATA)	**126**	VGA SCLOCK
28	DPB_TMDS_CLOCK_SHIELD	**61**	LAN0 DI1 P	**94**	+3.3V (SATA)	**127**	GND
29	DPB_TMDS_PWR	**62**	LAN0 DI2 P	**95**	VGA BLUE	**128**	UART_TX0_N
30	USB2_N	**63**	LAN0 DI3 P	**96**	VGA GND	**129**	GND
31	USB2_P	**64**	LAN1 DI0 P	**97**	SATA0_RX_N	**130**	No Connect
32	USB1_+5V	**65**	LAN1 DI1 P	**98**	SATA0_RX_P		
33	DPC_TMDS_PWR	**66**	LAN1 DI2 P	**99**	GND		

J5 – Keyed-C (130-Pin size #23 38999 Connector)

PMC/XMC rear I/O from PMC/XMC Site 2 on the carrier (ACEX-46xx)

Pin	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*	*Pin*	*Signal Name*
1	J24_RIO0_P	**34**	J24_RIO14_P	**67**	J24_RIO26_P	**100**	GND
2	J24_RIO0_N	**35**	J24_RIO14_N	**68**	J24_RIO26_N	**101**	J26_SIO7_P
3	J24_RIO1_P	**36**	GND	**69**	GND	**102**	J26_SIO7_N
4	J24_RIO1_N	**37**	J24_RIO15_P	**70**	J24_RIO27_P	**103**	J26_SIO8_P
5	J24_RIO2_P	**38**	J24_RIO15_N	**71**	J24_RIO27_N	**104**	J26_SIO8_N
6	J24_RIO2_N	**39**	GND	**72**	J24_RIO28_P	**105**	GND
7	J24_RIO3_P	**40**	GND	**73**	J24_RIO28_N	**106**	J26_SIO9_P
8	J24_RIO3_N	**41**	J24_RIO16_P	**74**	GND	**107**	J26_SIO9_N
9	GND	**42**	J24_RIO16_N	**75**	J24_RIO29_P	**108**	J26_SIO10_P
10	J24_RIO4_P	**43**	J24_RIO17_P	**76**	J24_RIO29_N	**109**	J26_SIO10_N
11	J24_RIO4_N	**44**	J24_RIO17_N	**77**	GND	**110**	No connect
12	GND	**45**	GND	**78**	J24_RIO30_P	**111**	J26_SIO11_P
13	J24_RIO5_P	**46**	GND	**79**	J24_RIO30_N	**112**	J26_SIO11_N
14	J24_RIO5_N	**47**	J24_RIO18_P	**80**	GND	**113**	GND
15	GND	**48**	J24_RIO18_N	**81**	J24_RIO31_P	**114**	J26_SIO12_P
16	J24_RIO6_P	**49**	GND	**82**	J24_RIO31_N	**115**	J26_SIO12_N
17	J24_RIO6_N	**50**	J24_RIO19_P	**83**	GND	**116**	GND
18	J24_RIO7_P	**51**	J24_RIO19_N	**84**	J26_SIO0_GCLK_P	**117**	J26_SIO13_P
19	J24_RIO7_N	**52**	J24_RIO20_P	**85**	J26_SIO0_GCLK_	**118**	J26_SIO13_N
20	J24_RIO8_P	**53**	J24_RIO20_N	**86**	J26_SIO1_P	**119**	GND
21	J24_RIO8_N	**54**	GND	**87**	J26_SIO1_N	**120**	J26_SIO14_P
22	J24_RIO9_P	**55**	J24_RIO21_P	**88**	J26_SIO2_P	**121**	J26_SIO14_N
23	J24_RIO9_N	**56**	J24_RIO21_N	**89**	J26_SIO2_N	**122**	GND
24	J24_RIO10_P	**57**	J24_RIO22_P	**90**	J26_SIO3_P	**123**	J26_SIO15_P
25	J24_RIO10_N	**58**	J24_RIO22_N	**91**	J26_SIO3_N	**124**	J26_SIO15_N
26	GND	**59**	GND	**92**	J26_SIO4_P	**125**	J26_SIO16_P
27	J24_RIO11_P	**60**	J24_RIO23_P	**93**	J26_SIO4_N	**126**	J26_SIO16_N
28	J24_RIO11_N	**61**	J24_RIO23_N	**94**	GND	**127**	J26_SIO17_P
29	J24_RIO12_P	**62**	J24_RIO24_P	**95**	J26_SIO5_P	**128**	J26_SIO17_N
30	J24_RIO12_N	**63**	J24_RIO24_N	**96**	J26_SIO5_N	**129**	J26_SIO18_GCLK_P
31	No connect	**64**	GND	**97**	GND	**130**	J26_SIO18_GCLK_N
32	J24_RIO13_P	**65**	J24_RIO25_P	**98**	J26_SIO6_P		
33	J24_RIO13_N	**66**	J24_RIO25_N	**99**	J26_SIO6_N		

J6 – Keyed-A (6-Pin size #12 38999 Connectors)

Input power connector

Pin	Signal Name
1	PWR_BTN
2	Reserved (DO NOT USE)
3	INPUT_PWR
4	INPUT_GND
5	Reserved (DO NOT USE)
6	GND

J7 (160-Pin SEARAY Mezzanine Connector)

Signals between Site 1 mezzanine board to 38999 connector, J3.

	A	B	C	D	E	F	G	H
1	J14_RIO0_P	J14_RIO2_N	14_RIO7_N	J14_RIO5_N	J14_RIO10_N	J14_RIO12_P	J14_RIO14_N	J14_RIO18_N
2	J14_RIO0_N	J14_RIO2_P	J14_RIO7_P	J14_RIO5_P	J14_RIO10_P	J14_RIO12_N	J14_RIO14_P	J14_RIO18_P
3	GND	GND	GND	GND	GND	GND	GND	GND
4	J14_RIO3_P	J14_RIO4_P	J14_RIO8_P	J14_RIO1_P	J14_RIO11_P	J14_RIO22_N	J14_RIO31_N	J16_SIO18_GCLK_P
5	J14_RIO3_N	J14_RIO4_N	J14_RIO8_N	J14_RIO1_N	J14_RIO11_N	J14_RIO22_P	J14_RIO31_P	J16_SIO18_GCLK_N
6	GND	GND	GND	GND	GND	GND	GND	GND
7	J14_RIO6_P	J14_RIO13_P	J14_RIO16_P	J14_RIO9_P	J14_RIO21_N	J16_SIO4_N	J16_SIO12_N	NC
8	J14_RIO6_N	J14_RIO13_N	J14_RIO16_N	J14_RIO9_N	J14_RIO21_P	J16_SIO4_P	J16_SIO12_P	NC
9	GND	GND	GND	GND	GND	GND	GND	NC
10	J14_RIO15_P	J14_RIO19_P	J14_RIO20_P	J14_RIO17_P	J14_RIO24_N	J14_RIO30_P	J16_SIO13_N	NC
11	J14_RIO15_N	J14_RIO19_N	J14_RIO20_N	J14_RIO17_N	J14_RIO24_P	J14_RIO30_N	J16_SIO13_P	NC
12	GND	GND	GND	GND	GND	GND	GND	NC
13	J14_RIO23_P	J14_RIO29_P	J16_SIO11_N	J14_RIO25_P	J14_RIO26_P	J16_SIO0_GCLK_P	J16_SIO15_N	NC
14	J14_RIO23_N	J14_RIO29_N	J16_SIO11_P	J14_RIO25_N	J14_RIO26_N	J16_SIO0_GCLK_N	J16_SIO15_P	NC
15	GND	GND	GND	GND	GND	GND	GND	NC
16	J14_RIO28_P	J16_SIO3_N	J16_SIO10_P	J16_SIO1_P	J16_SIO7_N	J16_SIO8_N	J16_SIO14_N	NC
17	J14_RIO28_N	J16_SIO3_P	J16_SIO10_N	J16_SIO1_N	J16_SIO7_P	J16_SIO8_P	J16_SIO14_P	NC
18	GND	GND	GND	GND	GND	GND	GND	NC
19	J16_SIO5_P	J16_SIO6_P	J16_SIO17_P	J14_RIO27_P	J16_SIO2_P	J16_SIO9_P	J16_SIO16_P	NC
20	J16_SIO5_N	J16_SIO6_N	J16_SIO17_N	J14_RIO27_N	J16_SIO2_N	J16_SIO9_N	J16_SIO16_N	NC

J8 (160-Pin SEARAY Mezzanine Connector)

Signals between system and Site 1 mezzanine board.

	A	B	C	D	E	F	G	H
1	3.3V	3.3V	3.3V	J14_RIO15_N	J14_RIO19_P	J14_RIO18_N	J16_SIO7_P	J14_RIO23_P
2	5V	5V	5V	J14_RIO15_P	J14_RIO19_N	J14_RIO18_P	J16_SIO7_N	J14_RIO23_N
3	12V	12V	GND	J14_RIO13_N	J14_RIO11_P	J14_RIO14_P	J16_SIO8_P	J14_RIO25_P
4	J16_SIO4_N	J16_SIO14_N	J14_RIO12_N	J14_RIO13_P	J14_RIO11_N	J14_RIO14_N	J16_SIO8_N	J14_RIO25_N
5	J16_SIO4_P	J16_SIO14_P	J14_RIO12_P	J16_SIO2_N	J14_RIO24_N	J14_RIO7_N	J16_SIO9_P	J14_RIO27_P
6	J14_RIO31_P	J14_RIO8_P	J16_SIO5_N	J16_SIO2_P	J14_RIO24_P	J14_RIO7_P	J16_SIO9_N	J14_RIO27_N
7	J14_RIO31_N	J14_RIO8_N	J16_SIO5_P	J14_RIO9_N	J16_SIO1_P	J14_RIO10_N	J16_SIO10_P	J14_RIO29_P
8	GND	GND	GND	J14_RIO9_P	J16_SIO1_N	J14_RIO10_P	J16_SIO10_N	J14_RIO29_N
9	J16_SIO6_P	J14_RIO26_N	J16_SIO15_P	J16_SIO3_P	J14_RIO20_P	J14_RIO6_N	J16_SIO11_P	J14_RIO17_P
10	J16_SIO6_N	J14_RIO26_P	J16_SIO15_N	J16_SIO3_N	J14_RIO20_N	J14_RIO6_P	J16_SIO11_N	J14_RIO17_N
11	J14_RIO4_P	J14_RIO0_N	J14_RIO30_N	J14_RIO5_N	J14_RIO3_P	J14_RIO28_P	J16_SIO12_P	J14_RIO22_P
12	J14_RIO4_N	J14_RIO0_P	J14_RIO30_P	J14_RIO5_P	J14_RIO3_N	J14_RIO28_N	J16_SIO12_N	J14_RIO22_N
13	GND	GND	GND	WAKE0#	I2C_DAT	GPI_1	GPI_2	GPI_3
14	J16_SIO0_GCLK_P	J16_SIO13_N	J16_SIO16_N	PLT_RST#	I2C_CLK	GPO_1	GPO_2	GPO_3
15	J16_SIO0_GCLK_N	J16_SIO13_P	J16_SIO16_P	SATA1_TX_P	GND	GND	GND	GND
16	J16_SIO18_GCLK_N	J14_RIO2_N	J14_RIO16_P	SATA1_TX_N	PCIE0_RX_N	PCIE0_TX_N	PCIE2_TX_P	PCIE3_TX_P
17	J16_SIO18_GCLK_P	J14_RIO2_P	J14_RIO16_N	SATA1_RX_N	PCIE0_RX_P	PCIE0_TX_P	PCIE2_TX_N	PCIE3_TX_N
18	GND	GND	GND	SATA1_RX_P	GND	GND	GND	GND
19	J16_SIO17_N	J14_RIO21_P	J14_RIO1_N	PCIE1_RX_P	PCIE_CLK_PEG_N	PCIE1_TX_N	PCIE2_RX_P	PCIE3_RX_P
20	J16_SIO17_P	J14_RIO21_N	J14_RIO1_P	PCIE1_RX_N	PCIE_CLK_PEG_P	PCIE1_TX_P	PCIE2_RX_N	PCIE3_RX_N

J9 (160-Pin SEARAY Mezzanine Connector)

Signals between Site 2 mezzanine board and 38999 connector, J5.

	A	B	C	D	E	F	G	H
1	J24_RIO0_P	J24_RIO2_N	J24_IO7_N	J24_RIO5_N	J24_RIO10_N	J24_RIO12_P	J24_RIO14_N	J24_RIO18_N
2	J24_RIO0_N	J24_RIO2_P	J24_RIO7_P	J24_RIO5_P	J24_RIO10_P	J24_RIO12_N	J24_RIO14_P	J24_RIO18_P
3	GND	GND	GND	GND	GND	GND	GND	GND
4	J24_RIO3_P	J24_RIO4_P	J24_RIO8_P	J24_RIO1_P	J24_RIO11_P	J24_RIO22_N	J24_RIO31_N	J26_SIO18_GCLK_P
5	J24_RIO3_N	J24_RIO4_N	J24_RIO8_N	J24_RIO1_N	J24_RIO11_N	J24_RIO22_P	J24_RIO31_P	J26_SIO18_GCLK_N
6	GND	GND	GND	GND	GND	GND	GND	GND
7	J24_RIO6_P	J24_RIO13_P	J24_RIO16_P	J24_RIO9_P	J24_RIO21_N	J26_SIO4_N	J26_SIO12_N	NC
8	J24_RIO6_N	J24_RIO13_N	J24_RIO16_N	J24_RIO9_N	J24_RIO21_P	J26_SIO4_P	J26_SIO12_P	NC
9	GND	GND	GND	GND	GND	GND	GND	NC
10	J24_RIO15_P	J24_RIO19_P	J24_RIO20_P	J24_RIO17_P	J24_RIO24_N	J24_RIO30_P	J26_SIO13_N	NC
11	J24_RIO15_N	J24_RIO19_N	J24_RIO20_N	J24_RIO17_N	J24_RIO24_P	J24_RIO30_N	J26_SIO13_P	NC
12	GND	GND	GND	GND	GND	GND	GND	NC
13	J24_RIO23_P	J24_RIO29_P	J26_SIO11_N	J24_RIO25_P	J24_RIO26_P	J26_SIO0_GCLK_P	J26_SIO15_N	NC
14	J24_RIO23_N	J24_RIO29_N	J26_SIO11_P	J24_RIO25_N	J24_RIO26_N	J26_SIO0_GCLK_N	J26_SIO15_P	NC
15	GND	GND	GND	GND	GND	GND	GND	NC
16	J24_RIO28_P	J26_SIO3_N	J26_SIO10_P	J26_SIO1_P	J26_SIO7_N	J26_SIO8_N	J26_SIO14_N	NC
17	J24_RIO28_N	J26_SIO3_P	J26_SIO10_N	J26_SIO1_N	J26_SIO7_P	J26_SIO8_P	J26_SIO14_P	NC
18	GND	GND	GND	GND	GND	GND	GND	NC
19	J26_SIO5_P	J26_SIO6_P	J26_SIO17_P	J24_RIO27_P	J26_SIO2_P	J26_SIO9_P	J26_SIO16_P	NC
20	J26_SIO5_N	J26_SIO6_N	J26_SIO17_N	J24_RIO27_N	J26_SIO2_N	J26_SIO9_N	J26_SIO16_N	NC

J10 (160-Pin SEARAY Mezzanine Connector)

Signals between system and Site 2 mezzanine board.

	A	B	C	D	E	F	G	H
1	3.3V	3.3V	3.3V	J24_RIO15_N	J24_RIO19_P	J24_RIO18_N	J26_SIO7_P	J24_RIO23_P
2	5V	5V	5V	J24_RIO15_P	J24_RIO19_N	J24_RIO18_P	J26_SIO7_N	J24_RIO23_N
3	12V	12V	GND	J24_RIO13_N	J24_RIO11_P	J24_RIO14_P	J26_SIO8_P	J24_RIO25_P
4	J26_SIO4_N	J26_SIO14_N	J24_RIO12_N	J24_RIO13_P	J24_RIO11_N	J24_RIO14_N	J26_SIO8_N	J24_RIO25_N
5	J26_SIO4_P	J26_SIO14_P	J24_RIO12_P	J26_SIO2_N	J24_RIO24_N	J24_RIO7_N	J26_SIO9_P	J24_RIO27_P
6	J24_RIO31_P	J24_RIO8_P	J26_SIO5_N	J26_SIO2_P	J24_RIO24_P	J24_RIO7_P	J26_SIO9_N	J24_RIO27_N
7	J24_RIO31_N	J24_RIO8_N	J26_SIO5_P	J24_RIO9_N	J26_SIO1_P	J24_RIO10_N	J26_SIO10_P	J24_RIO29_P
8	GND	GND	GND	J24_RIO9_P	J26_SIO1_N	J24_RIO10_P	J26_SIO10_N	J24_RIO29_N
9	J26_SIO6_P	J24_RIO26_N	J26_SIO15_P	J26_SIO3_P	J24_RIO20_P	J24_RIO6_N	J26_SIO11_P	J24_RIO17_P
10	J26_SIO6_N	J24_RIO26_P	J26_SIO15_N	J26_SIO3_N	J24_RIO20_N	J24_RIO6_P	J26_SIO11_N	J24_RIO17_N
11	J24_RIO4_P	J24_RIO0_N	J24_RIO30_N	J24_RIO5_N	J24_RIO3_P	J24_RIO28_P	J26_SIO12_P	J24_RIO22_P
12	J24_RIO4_N	J24_RIO0_P	J24_RIO30_P	J24_RIO5_P	J24_RIO3_N	J24_RIO28_N	J26_SIO12_N	J24_RIO22_N
13	GND	GND	GND	J26_DP00_N	J26_DP04_N	J26_DP08_N	J26_DP12_N	J26_DP16_N
14	J26_SIO0_GCLK_P	J26_SIO13_N	J26_SIO16_N	J26_DP00_P	J26_DP04_P	J26_DP08_P	J26_DP12_P	J26_DP16_P
15	J26_SIO0_GCLK_N	J26_SIO13_P	J26_SIO16_P	J26_DP01_N	J26_DP05_N	J26_DP09_N	J26_DP13_N	J26_DP17_N
16	J26_SIO18_GCLK_N	J24_RIO2_N	J24_RIO16_P	J26_DP01_P	J26_DP05_P	J26_DP09_P	J26_DP13_P	J26_DP17_P
17	J26_SIO18_GCLK_P	J24_RIO2_P	J24_RIO16_N	J26_DP02_N	J26_DP06_N	J26_DP10_N	J26_DP14_N	J26_DP18_N
18	GND	GND	GND	J26_DP02_P	J26_DP06_P	J26_DP10_P	J26_DP14_P	J26_DP18_P
19	J26_SIO17_N	J24_RIO21_P	J24_RIO1_N	J26_DP03_N	J26_DP07_N	J26_DP11_N	J26_DP15_N	J26_DP19_N
20	J26_SIO17_P	J24_RIO21_N	J24_RIO1_P	J26_DP03_P	J26_DP07_P	J26_DP11_P	J26_DP15_P	J26_DP19_P

Handling

Modules should be handled in ESD-safe work areas in order to prevent damage to sensitive components from electrostatic discharges. These areas must be designed and maintained to prevent ESD damage.

ESD Safe Work Area Guidelines

1. Module should be handled at properly designated work areas only.
2. Designated ESD safe work areas must be checked periodically to ensure their continued safety from ESD. The areas should be monitored for the following:
    a. Proper grounding methods.
    b. Static dissipation of work surfaces.
    c. Static dissipation of floor surfaces.
    d. Operation of ion blowers and ion air guns.
3. Designated work areas must be kept free of static generating materials such as styrofoam, vinyl, plastic, fabrics or any other static generating materials.
4. Work areas must be kept clean and neat in order to prevent contamination of the work area.
5. Modules should be handled by the edges. Avoid touching the component leads.
   NOTE: *When not installed in a system, modules must be enclosed in shielded bags or boxes. There are three types of ESD protective enclosure materials this module was shipped in an approved ESD bag.*
6. Whenever handling the module the operator must be properly grounded by one of the following:
    a. Wearing a wrist strap connected to earth ground.
    b. Wearing heel grounders and have both feet on a static dissipative floor surface.
7. Stacking of modules should be avoided to prevent physical damage.

6.0 Service and Repair

Surface-Mounted Technology (SMT) boards are generally difficult to repair. It is highly recommended that a non-functioning board be returned to Acromag for repair. The board can be easily damaged unless special SMT repair and service tools are used. Further, Acromag has automated test equipment that thoroughly checks the performance of each board. When a board is first produced and when any repair is made, it is tested before shipment.

Service and Repair Assistance

Please refer to Acromag's Service Policy Bulletin or contact Acromag for complete details on how to obtain parts and repair.

Preliminary Service Procedure

CAUTION: POWER MUST BE TURNED OFF BEFORE REMOVING OR INSERTING BOARDS

Before beginning repair, be sure that all of the procedures in the "Preparation for Use" section have been followed. Also, refer to the documentation of your board to verify that it is correctly configured. Replacement of the board with one that is known to work correctly is a good technique to isolate a faulty board.

Where to Get Help

If you continue to have problems, your next step should be to visit the Acromag worldwide web site at http://www.acromag.com. Our web site contains the most up-to-date product and software information.

Acromag's application engineers can also be contacted directly for technical assistance via email, telephone, or FAX through the contact information listed at the bottom of this page. When needed, complete repair services are also available.

7.0 Specifications

Physical

ACEX-FP-IO-01:

Height	68.58 mm (2.700 in)
Width	125 mm (4.921 in)
Board Thickness	2.36 mm (0.093 in)
Unit Weight:	6.13oz (0.1738Kg)

ACEX-FP-IO-02:

Height	68.58 mm (2.700 in)
Width	200 mm (7.874 in)
Board Thickness	2.36 mm (0.093 in)
Unit Weight:	9.37oz (0.2655Kg)

Power Requirements

Note: The maximum current supplied to the Carrier/Module cannot exceed 15 Amps.

Minimum Input Voltage +10V DC
Maximum Input Voltage +36V DC

Environmental

Operating Temperature

Model	*Operating Temperature*
ACEX-FP-IO-01 **ACEX-FP-IO-02**	***-40℃ to 85℃***

Relative Humidity: 5-95% Non-Condensing.
Storage Temperature: -55°C to 100°C.

Appendix

The table below is the 500-Pin SEARAY pin-out as it relates to the technology type.
Note: Not all signals listed below are used in the ACEX-FP-IO-0x design.

500 - Pin SEARAY Connector pin-out by Type

DDI 1		
Signal Name	**Description**	**SEARAY Pin**
DPB_TX0_N	Digital Display Interface 1 - Output Differential Pair 0 Negative	H37
DPB_TX0_P	Digital Display Interface 1 - Output Differential Pair 0 Positive	H38
DPB_TX1_N	Digital Display Interface 1 - Output Differential Pair 1 Negative	K37
DPB_TX1_P	Digital Display Interface 1 - Output Differential Pair 1 Positive	K38
DPB_TX2_N	Digital Display Interface 1 - Output Differential Pair 2 Negative	J35
DPB_TX2_P	Digital Display Interface 1 - Output Differential Pair 2 Positive	J36
DPB_TX3_N	Digital Display Interface 1 - Output Differential Pair 3 Negative	G35
DPB_TX3_P	Digital Display Interface 1 - Output Differential Pair 3 Positive	G36
DPB_AUX_SEL	Digital Display Interface 1 - AUX Function Select	D36
DPB_CTRL_AUX_N	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Negative	F37
DPB_CTRL_AUX_P	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Positive	F38
DPB_HPD	Digital Display Interface 1 - Hot Plug Detect	D37

DDI 2		
Signal Name	**Description**	**SEARAY Pin**
DPC_TX0_N	Digital Display Interface 2 - Output Differential Pair 0 Negative	D29
DPC_TX0_P	Digital Display Interface 2 - Output Differential Pair 0 Positive	D30
DPC_TX1_N	Digital Display Interface 2 - Output Differential Pair 1 Negative	F29
DPC_TX1_P	Digital Display Interface 2 - Output Differential Pair 1 Positive	F30
DPC_TX2_N	Differential Pair - "DDI2_PAIR2-"	E27
DPC_TX2_P	Differential Pair - "DDI2_PAIR2+"	E28
DPC_TX3_N	Digital Display Interface 2 - Output Differential Pair 3 Negative	C27
DPC_TX3_P	Digital Display Interface 2 - Output Differential Pair 3 Positive	C28
DPC_AUX_SEL	Digital Display Interface 2 - AUX Function Select	B32
DPC_CTRL_AUX_N	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Negative	E31
DPC_CTRL_AUX_P	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Positive	E32
DPC_HPD	Digital Display Interface 2 - Hot Plug Detect	C33

DDI 3		
Signal Name	**Description**	**SEARAY Pin**
DPD_TX0_N	Digital Display Interface 3 - Output Differential Pair 0 Negative	H33
DPD_TX0_P	Digital Display Interface 3 - Output Differential Pair 0 Positive	H34
DPD_TX1_N	Digital Display Interface 3 - Output Differential Pair 1 Negative	K33
DPD_TX1_P	Digital Display Interface 3 - Output Differential Pair 1 Positive	K34
DPD_TX2_N	Digital Display Interface 3 - Output Differential Pair 2 Negative	J31
DPD_TX2_P	Digital Display Interface 3 - Output Differential Pair 2 Positive	J32
DPD_TX3_N	Digital Display Interface 3 - Output Differential Pair 3 Negative	G31
DPD_TX3_P	Digital Display Interface 3 - Output Differential Pair 3 Positive	G32
DPD_AUX_SEL	Digital Display Interface 3 - AUX Function Select	D33
DPD_CTRL_AUX_N	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Negative	F33
DPD_CTRL_AUX_P	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Positive	F34
DPD_HPD	Digital Display Interface 3 - Hot Plug Detect	D34

eDP		
Signal Name	**Description**	**SEARAY Pin**
EDP_TX0_N	eDP Differential Pair 0 Negative	E23
EDP_TX0_P	eDP Differential Pair 0 Positive	E24
EDP_TX1_N	eDP Differential Pair 1 Negative	D25
EDP_TX1_P	eDP Differential Pair 1 Positive	D26
EDP_TX2_N	eDP Differential Pair 2 Negative	F25
EDP_TX2_P	eDP Differential Pair 2 Positive	F26
EDP_TX3_N	eDP Differential Pair 3 Negative	C23
EDP_TX3_P	eDP Differential Pair 3 Positive	C24
EDP_VDDEN	eDP Power Enable	C22
EDP_BKLTEN	eDP Backlight Enable	A28
EDP_BKLTCTL	eDP Backlight Brightness Control	A27
EDP_AUX_P	eDP AUX Signal Positive	H22
EDP_AUX_N	eDP AUX Signal Negative	H21
EDP_HPD	eDP Hot Plug Detect	A26

VGA		
Signal Name	**Description**	**SEARAY Pin**
VGA_RED	Analog Video Output Red	B44
VGA_GRN	Analog Video Output Green	B45
VGA_BLU	Analog Video Output Blue	B43
VGA_HSYNC	VGA Output Horizontal Sync	D45
VGA_VSYNC	VGA Output Vertical Sync	D44
VGA_I2C_CK	Display Data Channel (DDC) Clock Line	D46
VGA_I2C_DAT	Display Data Channel (DDC) Data Line	C46

SATA		
Signal Name	**Description**	**SEARAY Pin**
SATA0_RX_N	SATA0 Receive Differential Pair Negative	J39
SATA0_RX_P	SATA0 Receive Differential Pair Positive	J40
SATA0_TX_N	SATA0 Transmit Differential Pair Negative	K41
SATA0_TX_P	SATA0 Transmit Differential Pair Positive	K42
SATA1_RX_N	SATA1 Receive Differential Pair Negative	G39
SATA1_RX_P	SATA1 Receive Differential Pair Positive	G40
SATA1_TX_N	SATA1 Transmit Differential Pair Negative	H41
SATA1_TX_P	SATA1 Transmit Differential Pair Positive	H42
SATA_ACT#	ATA (Parallel and Serial) or SAS Activity Indicator Signal	C40

USB0		
Signal Name	**Description**	**SEARAY Pin**
USB0_+5V	USB0 Positive 5V from Carrier	A21
USB0_P	USB0 Differential Pair - "USB0+"	B21
USB0_N	USB0 Differential Pair - "USB0-"	B22
USB0_SSRX_P	USB0 USB 3.0 SuperSpeed Receive Positive	J47
USB0_SSRX_N	USB0 USB 3.0 SuperSpeed Receive Negative	J48
USB0_SSTX_P	USB0 USB 3.0 SuperSpeed Transmit Positive	K49
USB0_SSTX_N	USB0 USB 3.0 SuperSpeed Transmit Negative	K50

USB1		
Signal Name	**Description**	**SEARAY Pin**
USB1_+5V	USB1 Positive 5V from Carrier	C21
USB1_P	USB1 Differential Pair - "USB1+"	D21
USB1_N	USB1 Differential Pair - "USB1-"	D22
USB1_SSRX_P	USB1 USB 3.0 SuperSpeed Receive Positive	G47
USB1_SSRX_N	USB1 USB 3.0 SuperSpeed Receive Negative	G48
USB1_SSTX_P	USB1 USB 3.0 SuperSpeed Transmit Positive	H49
USB1_SSTX_N	USB1 USB 3.0 SuperSpeed Transmit Negative	H50

USB2		
Signal Name	**Description**	**SEARAY Pin**
USB2_+5V	USB2 Positive 5V from Carrier	E21
USB2_P	USB2 Differential Pair - "USB2+"	F21
USB2_N	USB2 Differential Pair - "USB2-"	F22
USB2_SSRX_P	USB2 USB 3.0 SuperSpeed Receive Positive	J43
USB2_SSRX_N	USB2 USB 3.0 SuperSpeed Receive Negative	J44
USB2_SSTX_P	USB2 USB 3.0 SuperSpeed Transmit Positive	K45
USB2_SSTX_N	USB2 USB 3.0 SuperSpeed Transmit Negative	K46

USB3		
Signal Name	**Description**	**SEARAY Pin**
USB3_+5V	USB3 Positive 5V from Carrier	A25
USB3_P	USB3 Differential Pair - "USB3+"	B25
USB3_N	USB3 Differential Pair - "USB3-"	B26
USB3_SSRX_P	USB3 USB 3.0 SuperSpeed Receive Positive	G43
USB3_SSRX_N	USB3 USB 3.0 SuperSpeed Receive Negative	G44
USB3_SSTX_P	USB3 USB 3.0 SuperSpeed Transmit Positive	H45
USB3_SSTX_N	USB3 USB 3.0 SuperSpeed Transmit Negative	H46

USB4		
Signal Name	**Description**	**SEARAY Pin**
USB4_+5V	USB4 Positive 5V from Carrier	A29
USB4_P	USB4 Differential Pair - "USB4+"	B29
USB4_N	USB4 Differential Pair - "USB4-"	B30

USB5		
Signal Name	**Description**	**SEARAY Pin**
USB5_+5V	USB5 Positive 5V from Carrier	B31
USB5_P	USB5 Differential Pair - "USB5+"	C31
USB5_N	USB5 Differential Pair - "USB5-"	C32

Serial		
Signal Name	**Description**	**SEARAY Pin**
UART_TX0_P	General Purpose Serial Port 0 from Carrier Transmitter Positive	B33
UART_TX0_N	General Purpose Serial Port 0 from Carrier Transmitter Negative	B34
UART_RX0_P	General Purpose Serial Port 0 from Carrier Receiver Positive	B35
UART_RX0_N	General Purpose Serial Port 0 from Carrier Receiver Negative	B36
UART_TX1_P	General Purpose Serial Port 1 from Carrier Transmitter Positive	B37
UART_TX1_N	General Purpose Serial Port 1 from Carrier Transmitter Negative	B38
UART_RX1_P	General Purpose Serial Port 1 from Carrier Receiver Positive	B39
UART_RX1_N	General Purpose Serial Port 1 from Carrier Receiver Negative	B40

LAN0		
Signal Name	**Description**	**SEARAY Pin**
GBE0_MDI0_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Positive	D47
GBE0_MDI0_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Negative	D48
GBE0_MDI1_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Positive	C47
GBE0_MDI1_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Negative	C48
GBE0_MDI2_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Positive	B47
GBE0_MDI2_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Negative	B48
GBE0_MDI3_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Positive	A47
GBE0_MDI3_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Negative	A48
GBE0_ACT#	Gigabit Ethernet Controller 0 from Module - Activity Indicator	F49
GBE0_LINK#	Gigabit Ethernet Controller 0 from Module - Link Indicator	E49
GBE0_L1000#	Gigabit Ethernet Controller 0 from Module - 1000 Mb/s Link Indicator	E47

LAN1		
Signal Name	**Description**	**SEARAY Pin**
GBE1_MDI0_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Positive	D49
GBE1_MDI0_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Negative	D50
GBE1_MDI1_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Positive	C49
GBE1_MDI1_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Negative	C50
GBE1_MDI2_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Positive	B49
GBE1_MDI2_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Negative	B50
GBE1_MDI3_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Positive	A49
GBE1_MDI3_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Negative	A50
GBE1_ACT#	Gigabit Ethernet Controller 1 from Carrier - Activity Indicator	F50
GBE1_LINK#	Gigabit Ethernet Controller 1 from Carrier - Link Indicator	E50
GBE1_1V9	External 1.9V Reference Voltage from Carrier for Gigabit Ethernet Controller 1	E48

Audio		
Signal Name	**Description**	**SEARAY Pin**
LINE-IN_R	Right Channel Audio Line In from CODEC on Carrier	A44
LINE-IN_L	Left Channel Audio Line In from CODEC on Carrier	A45
LINE-OUT_R	Right Channel Audio Line Out from CODEC on Carrier	A42
LINE-OUT_L	Left Channel Audio Line Out from CODEC on Carrier	B42
AUDIO_GND	AUDIO_GND connected to Digital GND near CODEC on Carrier	A43

PCIE		
Signal Name	**Description**	**SEARAY Pin**
PCIE0_RX_N	PCI Express Lane 0 Receive Differential Pair Negative	G23
PCIE0_RX_P	PCI Express Lane 0 Receive Differential Pair Positive	G24
PCIE0_TX_N	PCI Express Lane 0 Transmit Differential Pair Negative	H25
PCIE0_TX_P	PCI Express Lane 0 Transmit Differential Pair Positive	H26
PCIE1_RX_N	PCI Express Lane 1 Receive Differential Pair Negative	J23
PCIE1_RX_P	PCI Express Lane 1 Receive Differential Pair Positive	J24
PCIE1_TX_P	PCI Express Lane 1 Transmit Differential Pair Positive	K25
PCIE1_TX_N	PCI Express Lane 1 Transmit Differential Pair Negative	K26
PCIE2_RX_N	PCI Express Lane 2 Receive Differential Pair Negative	G27
PCIE2_RX_P	PCI Express Lane 2 Receive Differential Pair Positive	G28
PCIE2_TX_N	PCI Express Lane 2 Transmit Differential Pair Negative	H29
PCIE2_TX_P	PCI Express Lane 2 Transmit Differential Pair Positive	H30
PCIE3_RX_N	PCI Express Lane 3 Receive Differential Pair Negative	J27
PCIE3_RX_P	PCI Express Lane 3 Receive Differential Pair Positive	J28
PCIE3_TX_N	PCI Express Lane 3 Transmit Differential Pair Negative	K29
PCIE3_TX_P	PCI Express Lane 3 Transmit Differential Pair Positive	K30
CLK_PEG_N	PCIe/PEG Reference Clock Output Negative	K21
CLK_PEG_P	PCIe/PEG Reference Clock Output Positive	K22

PMC Site 1		
Signal Name	**Description**	**SEARAY Pin**
J14_RIO0_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO0-"	D15
J14_RIO0_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO0+"	D16
J14_RIO1_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO1-"	C8
J14_RIO1_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO1+"	C9
J14_RIO2_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO2-"	C10
J14_RIO2_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO2+"	C11
J14_RIO3_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO3-"	D7
J14_RIO3_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO3+"	D8
J14_RIO4_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO4-"	C17
J14_RIO4_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO4+"	C16
J14_RIO5_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO5-"	C6
J14_RIO5_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO5+"	C7
J14_RIO6_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO6-"	B9
J14_RIO6_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO6+"	B10
J14_RIO7_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO7-"	B5
J14_RIO7_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO7+"	B6
J14_RIO8_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO8-"	B18
J14_RIO8_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO8+"	B17
J14_RIO9_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO9-"	C4
J14_RIO9_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO9+"	C5
J14_RIO10_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO10-"	B7
J14_RIO10_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO10+"	B8
J14_RIO11_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO11-"	D3
J14_RIO11_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO11+"	D4
J14_RIO12_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO12-"	C14
J14_RIO12_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO12+"	C15
J14_RIO13_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO13-"	C2
J14_RIO13_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO13+"	C3
J14_RIO14_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO14-"	B4
J14_RIO14_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO14+"	B3
J14_RIO15_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO15-"	D1
J14_RIO15_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO15+"	D2
J14_RIO16_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO16-"	D11
J14_RIO16_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO16+"	D12
J14_RIO17_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO17-"	B12
J14_RIO17_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO17+"	B11
J14_RIO18_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO18-"	B1
J14_RIO18_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO18+"	B2

J14_RIO19_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO19-"	A2
J14_RIO19_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO19+"	A3
J14_RIO20_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO20-"	A6
J14_RIO20_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO20+"	A7
J14_RIO21_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO21-"	A8
J14_RIO21_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO21+"	A9
J14_RIO22_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO22-"	B14
J14_RIO22_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO22+"	B13
J14_RIO23_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO23-"	A11
J14_RIO23_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO23+"	A10
J14_RIO24_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO24-"	A5
J14_RIO24_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO24+"	A4
J14_RIO25_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO25-"	A13
J14_RIO25_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO25+"	A12
J14_RIO26_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO26-"	B16
J14_RIO26_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO26+"	B15
J14_RIO27_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO27-"	A15
J14_RIO27_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO27+"	A14
J14_RIO28_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO28-"	C13
J14_RIO28_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO28+"	C12
J14_RIO29_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO29-"	A17
J14_RIO29_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO29+"	A16
J14_RIO30_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO30-"	C19
J14_RIO30_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO30+"	C18
J14_RIO31_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO31-"	A19
J14_RIO31_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO31+"	A18

XMC Site 1		
Signal Name	**Description**	**SEARAY Pin**
J16_SIO0_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO0+"	E12
J16_SIO0_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO0-"	E13
J16_SIO1_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO1+"	D6
J16_SIO1_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO1-"	D5
J16_SIO2_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO2+"	E3
J16_SIO2_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO2-"	E2
J16_SIO3_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO3+"	E4
J16_SIO3_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO3-"	E5
J16_SIO4_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO4+"	J7
J16_SIO4_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO4-"	J8
J16_SIO5_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO5+"	G3
J16_SIO5_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO5-"	G4
J16_SIO6_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO6+"	H18
J16_SIO6_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO6-"	H17
J16_SIO7_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO7+"	J3
J16_SIO7_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO7-"	J4
J16_SIO8_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO8+"	D9
J16_SIO8_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO8-"	D10
J16_SIO9_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO9+"	E10
J16_SIO9_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO9-"	E11
J16_SIO10_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO10+"	F13
J16_SIO10_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO10-"	F14
J16_SIO11_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO11+"	H9
J16_SIO11_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO11-"	H10
J16_SIO12_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO12+"	D13
J16_SIO12_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO12-"	D14
J16_SIO13_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO13+"	E14
J16_SIO13_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO13-"	E15
J16_SIO14_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO14+"	K13
J16_SIO14_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO14-"	K14
J16_SIO15_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO15+"	E16
J16_SIO15_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO15-"	E17
J16_SIO16_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO16+"	D17
J16_SIO16_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO16-"	D18
J16_SIO17_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO17+"	E18
J16_SIO17_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO17-"	E19
J16_SIO18_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO18+"	K17
J16_SIO18_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO18-"	K18

J16_DP00_P	XMC Site 1 Rear I/O Differential Pair "J16_DP00+"	F20
J16_DP00_N	XMC Site 1 Rear I/O Differential Pair "J16_DP00-"	F19
J16_DP01_P	XMC Site 1 Rear I/O Differential Pair "J16_DP01+"	G20
J16_DP01_N	XMC Site 1 Rear I/O Differential Pair "J16_DP01-"	G19
J16_DP02_P	XMC Site 1 Rear I/O Differential Pair "J16_DP02+"	F18
J16_DP02_N	XMC Site 1 Rear I/O Differential Pair "J16_DP02-"	F17
J16_DP03_P	XMC Site 1 Rear I/O Differential Pair "J16_DP03+"	J16
J16_DP03_N	XMC Site 1 Rear I/O Differential Pair "J16_DP03-"	J15
J16_DP04_P	XMC Site 1 Rear I/O Differential Pair "J16_DP04+"	H14
J16_DP04_N	XMC Site 1 Rear I/O Differential Pair "J16_DP04-"	H13
J16_DP05_P	XMC Site 1 Rear I/O Differential Pair "J16_DP05+"	G16
J16_DP05_N	XMC Site 1 Rear I/O Differential Pair "J16_DP05-"	G15
J16_DP06_P	XMC Site 1 Rear I/O Differential Pair "J16_DP06+"	J12
J16_DP06_N	XMC Site 1 Rear I/O Differential Pair "J16_DP06-"	J11
J16_DP07_P	XMC Site 1 Rear I/O Differential Pair "J16_DP07+"	F10
J16_DP07_N	XMC Site 1 Rear I/O Differential Pair "J16_DP07-"	F9
J16_DP08_P	XMC Site 1 Rear I/O Differential Pair "J16_DP08+"	G8
J16_DP08_N	XMC Site 1 Rear I/O Differential Pair "J16_DP08-"	G7
J16_DP09_P	XMC Site 1 Rear I/O Differential Pair "J16_DP09+"	G12
J16_DP09_N	XMC Site 1 Rear I/O Differential Pair "J16_DP09-"	G11
J16_DP10_P	XMC Site 1 Rear I/O Differential Pair "J16_DP10+"	K10
J16_DP10_N	XMC Site 1 Rear I/O Differential Pair "J16_DP10-"	K9
J16_DP11_P	XMC Site 1 Rear I/O Differential Pair "J16_DP11+"	F6
J16_DP11_N	XMC Site 1 Rear I/O Differential Pair "J16_DP11-"	F5
J16_DP12_P	XMC Site 1 Rear I/O Differential Pair "J16_DP12+"	J20
J16_DP12_N	XMC Site 1 Rear I/O Differential Pair "J16_DP12-"	J19
J16_DP13_P	XMC Site 1 Rear I/O Differential Pair "J16_DP13+"	H6
J16_DP13_N	XMC Site 1 Rear I/O Differential Pair "J16_DP13-"	H5
J16_DP14_P	XMC Site 1 Rear I/O Differential Pair "J16_DP14+"	K6
J16_DP14_N	XMC Site 1 Rear I/O Differential Pair "J16_DP14-"	K5
J16_DP15_P	XMC Site 1 Rear I/O Differential Pair "J16_DP15+"	H2
J16_DP15_N	XMC Site 1 Rear I/O Differential Pair "J16_DP15-"	H1
J16_DP16_P	XMC Site 1 Rear I/O Differential Pair "J16_DP16+"	E7
J16_DP16_N	XMC Site 1 Rear I/O Differential Pair "J16_DP16-"	E6
J16_DP17_P	XMC Site 1 Rear I/O Differential Pair "J16_DP17+"	F2
J16_DP17_N	XMC Site 1 Rear I/O Differential Pair "J16_DP17-"	F1
J16_DP18_P	XMC Site 1 Rear I/O Differential Pair "J16_DP18+"	K2
J16_DP18_N	XMC Site 1 Rear I/O Differential Pair "J16_DP18-"	K1
J16_DP19_P	XMC Site 1 Rear I/O Differential Pair "J16_DP19+"	E8
J16_DP19_N	XMC Site 1 Rear I/O Differential Pair "J16_DP19-"	E9

LPC		
Signal Name	**Description**	**SEARAY Pin**
LPC_AD0	LPC Multiplexed Address - Command and Data Bus 0	E46
LPC_AD1	LPC Multiplexed Address - Command and Data Bus 1	E45
LPC_AD2	LPC Multiplexed Address - Command and Data Bus 2	F46
LPC_AD3	LPC Multiplexed Address - Command and Data Bus 3	F45
LPC_FRAME#	LPC Frame Signal - LPC Cycle Start Indicator	E43
LPC_DRQ0#	LPC Serial DMA Request Signal 0	D42
LPC_DRQ1#	LPC Serial DMA Request Signal 1	D41
LPC_SERIRQ	LPC Serial Interrupt Signal	E42
LPC_CLK	LPC Clock Output - 33MHz Nominal	F42

I2C		
Signal Name	**Description**	**SEARAY Pin**
I2C_CLK	General Purpose I2C Port Clock Output	E36
I2C_DAT	General Purpose I2C Port Data I/O Line	E35

Miscellaneous		
Signal Name	**Description**	**SEARAY Pin**
SPKR	Audio Enunciator Output - PC Beep Signal	C35
WDTO	Watchdog Timer Output	C1
FAN_PWM	CPU Fan Speed Control	A23
FAN_TACH	CPU Fan Tach Input	A22

Power and System Management		
Signal Name	**Description**	**SEARAY Pin**
PWRBTN#	Power Button Input Signal	F41
SYSRST#	System Reset Signal	E1
PLT_RST#	Platform Reset Signal	A24
SUS_STAT#	Imminent Suspend Operation Indicator - Notifies LPC Devices	C37
SLP_S3#	Output Signal Indicating Suspend to RAM State	D40
SLP_S4#	Output Signal Indicating Suspend to Disk State	D39
SLP_S5#	Output Signal Indicating Soft Off State	D38
WAKE0#	PCI Express Wake Signal	G22
WAKE1#	General Purpose Wake Signal	G21
BATLOW#	Low Battery Indicator for External Battery	C36

Thermal Protection		
Signal Name	**Description**	**SEARAY Pin**
COM_THRM#	Off-Module Temp Sensor Input Signal Indicating Over-Temp Condition	D35
THRMTRIP3#	Output Signal Indicating CPU Entered Thermal Shutdown	C34

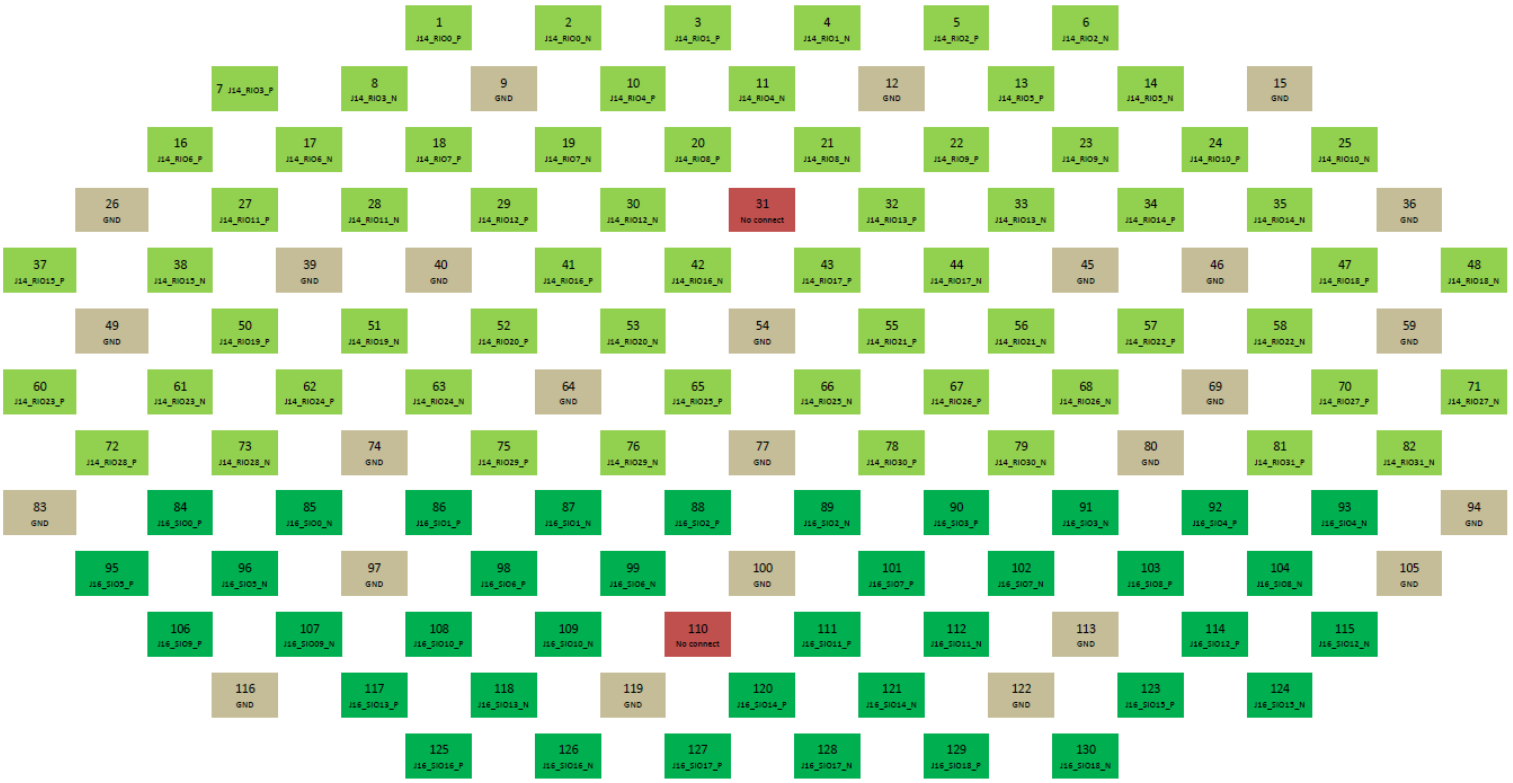
SM Bus		
Signal Name	**Description**	**SEARAY Pin**
SMB_CLK	System Management Bus Bidirectional Clock Line	E40
SMB_DATA	System Management Bus Bidirectional Data Line	E39
SMB_ALERT#	System Management Bus Alert Signal	E41

GPIO		
Signal Name	**Description**	**SEARAY Pin**
GPI_0	General Purpose Input 0	D19
GPI_1	General Purpose Input 1	C20
GPI_2	General Purpose Input 2	B19
GPI_3	General Purpose Input 3	B20
GPO_0	General Purpose Output 0	B23
GPO_1	General Purpose Output 1	B24
GPO_2	General Purpose Output 2	E20
GPO_3	General Purpose Output 3	D20

#23, 130 Pin 38999 keyed-B, Peripheral connector pin out (front view)

HDMI/DVI 1
HDMI/DVI 2
VGA
Audio
SATA
No connect
LAN 1
LAN 2
USB 0
USB 1
USB 3
COM 1
COM 2
WDTO
GND
12V
5V
3.3V

#23, 130 Pin 38999 keyed-A and C, I/O connector pin out (front view)



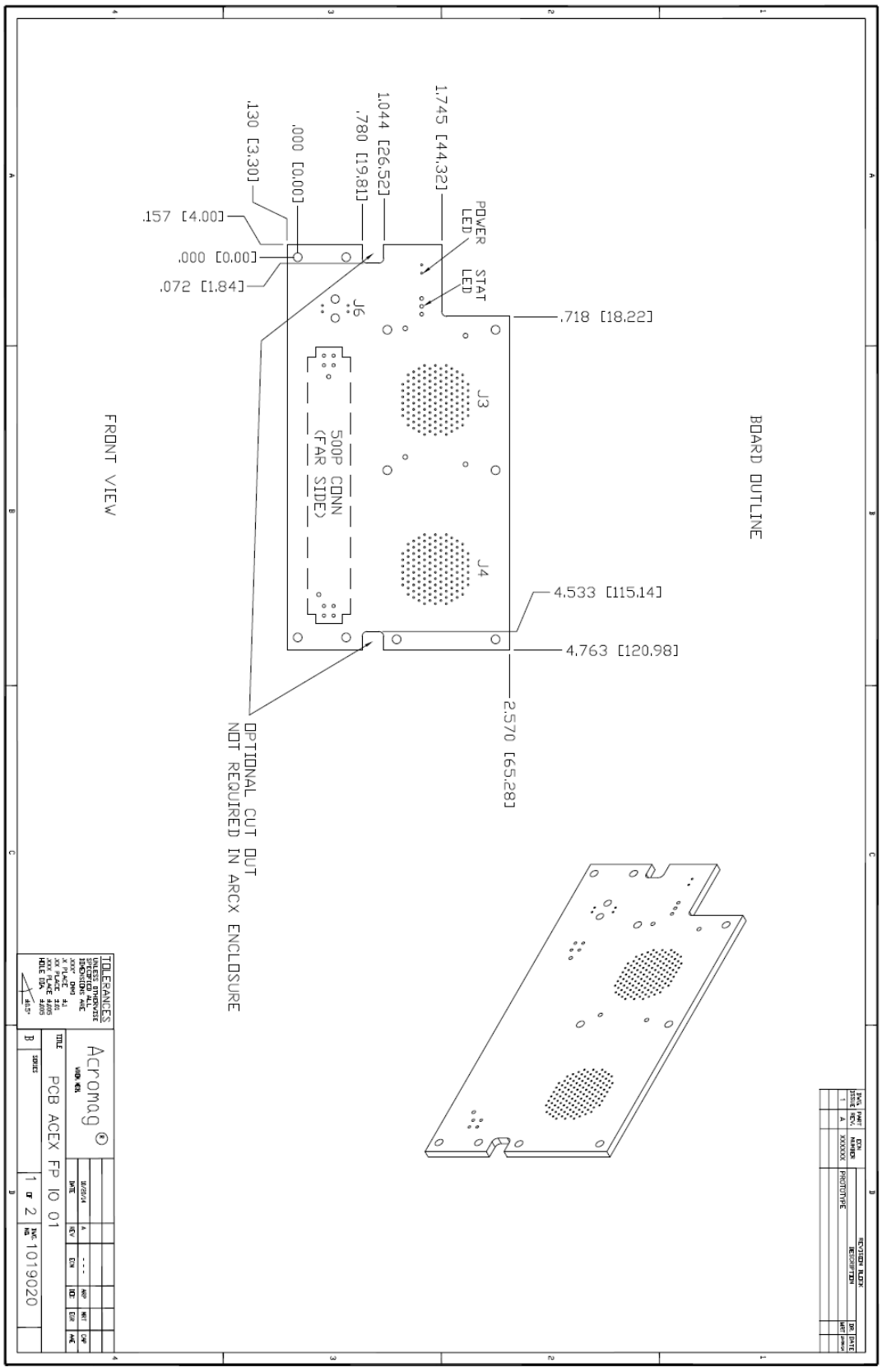
PMC IO
XMC IO
GND
No connect

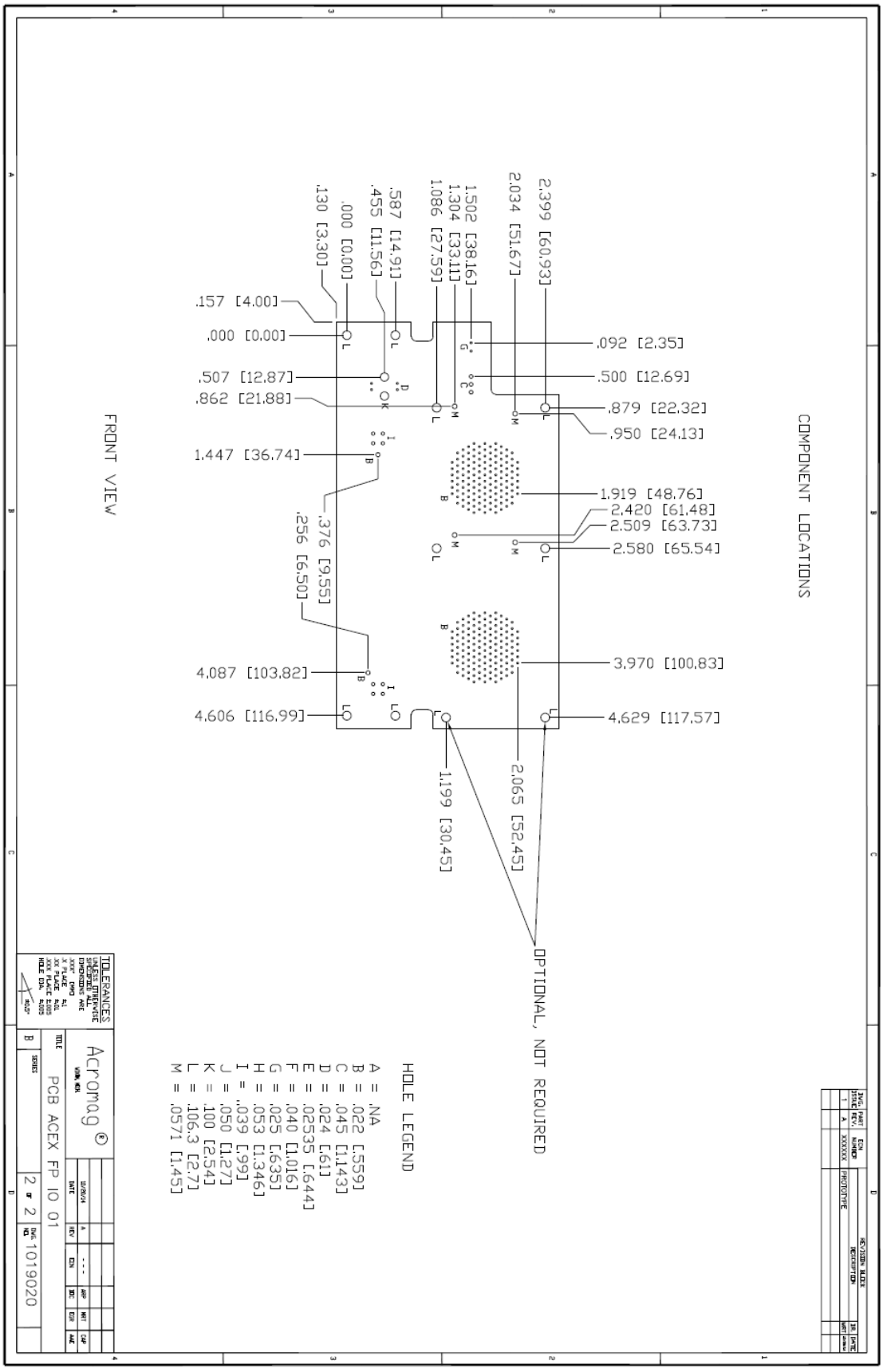
38999 Crimping Tools

If a Mating Cable Connector Kit (5028-558, 5028-559, 5028-560, or 5028-561) is purchased, the following list of tools will be needed to properly build the cable. These tools, as recommended by Amphenol, can be purchased from Daniel's Manufacturing Corporation at www.dmctools.com.

DMC Part #	Description	Military Part #	Notes
AF8	Crimp Tool for 12-size Pins	M22520/1-01	Only required for 5028-561
TH163	12 Gauge Turret-Head Crimp Positioner	M22520/1-04	Only required for 5028-561
AFM8	Miniature Crimp Tool for 23-size Pins	M22520/2-01	
K286	23-Size Crimp Positioner	M22520/2-12	
DAK225-22	23-Size Pin Installation Tool		
DRK225-22	23-Size Pin Removal Tool		

PCB Mechanical Drawings




FRONT VIEW
COMPONENT LOCATIONS
2.399 [60.93]
2.034 [51.67]
1.502 [38.16]
1.304 [33.11]
1.086 [27.59]
.587 [14.91]
.455 [11.56]
.000 [0.00]
.130 [3.30]
.157 [4.00]
.000 [0.00]
.507 [12.87]
.862 [21.88]
1.447 [36.74]
.376 [9.55]
.256 [6.50]
4.087 [103.82]
4.606 [116.99]
.092 [2.35]
.500 [12.69]
.879 [22.32]
.950 [24.13]
1.919 [48.76]
2.420 [61.48]
2.509 [63.73]
2.580 [65.54]
3.970 [100.83]
4.629 [117.57]
1.199 [30.45]
2.065 [52.45]
OPTIONAL, NOT REQUIRED
HOLE LEGEND
A = .NA
B = .022 [.559]
C = .045 [1.143]
D = .024 [.61]
E = .02535 [.644]
F = .040 [1.016]
G = .025 [.635]
H = .053 [1.346]
I = .039 [.99]
J = .050 [1.27]
K = .100 [2.54]
L = .106.3 [2.7]
M = .0571 [1.45]
TOLERANCES
Acromag
PCB ACEX FP IO 01
2 OF 2
1019020

Bill of Materials

The following Bill of Materials is only for the components listed on the Mechanical Drawings that have a fixed location. This reference is for customers that plan to design their own custom front panel boards that will mechanically fit in the ARCX 4000 enclosure.

Bill of Materials

Reference	*Description*	*Manufacture*	*Manufacture P/N*
J3	Size #23 38999 connector keyed-A	Amphenol	2M805-005-07ZNU23-130SA
J4	Size #23 38999 connector keyed-B	Amphenol	2M805-005-07ZNU23-130SB
J5	Size #23 38999 connector keyed-C	Amphenol	2M805-005-07ZNU23-130SC
J6	Size #12 38999 connector keyed-A	Amphenol	2M805-005-07ZNU12-201SA
500P	SEARAY 500 PIN CONNECTOR	Samtec	SEAM-50-02.0-L-10-2-A-GP-K-TR
200P	SEARAY 200 PIN CONNECTOR	Samtec	SEAM-20-02.0-L-10-2-A-GP-K-TR
J7 and J8	Header connector (for optional Power filter)	Samtec	HPF-04-01-T-S
Power LED	Main power indicator LED, Blue	SunLED	XLCBD11W
STATUS LED	System status LED, Multi-color	Kingbright	WP3VEGW

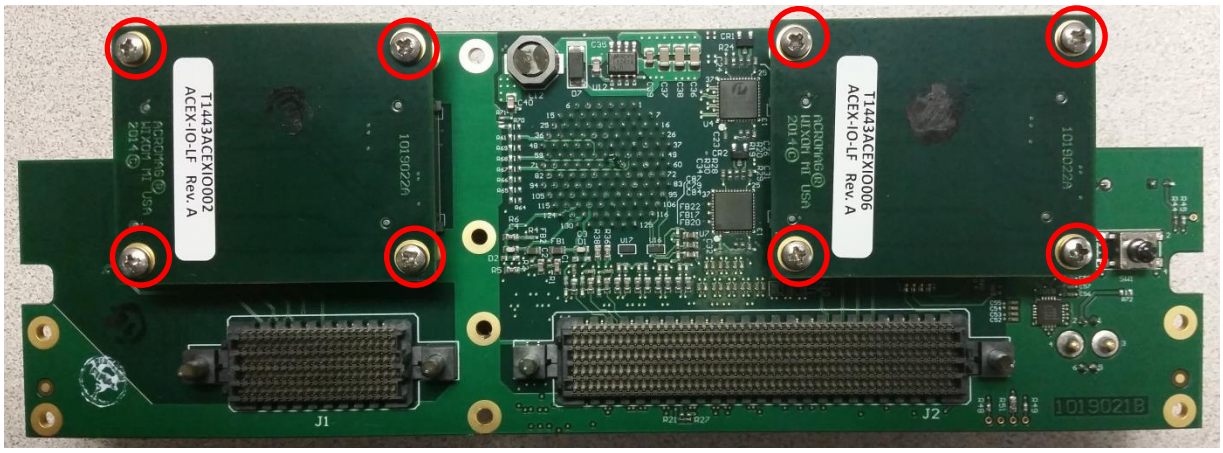
Schematic

The schematic is available for download at http://www.acromag.com.

Mezzanine Board Installation

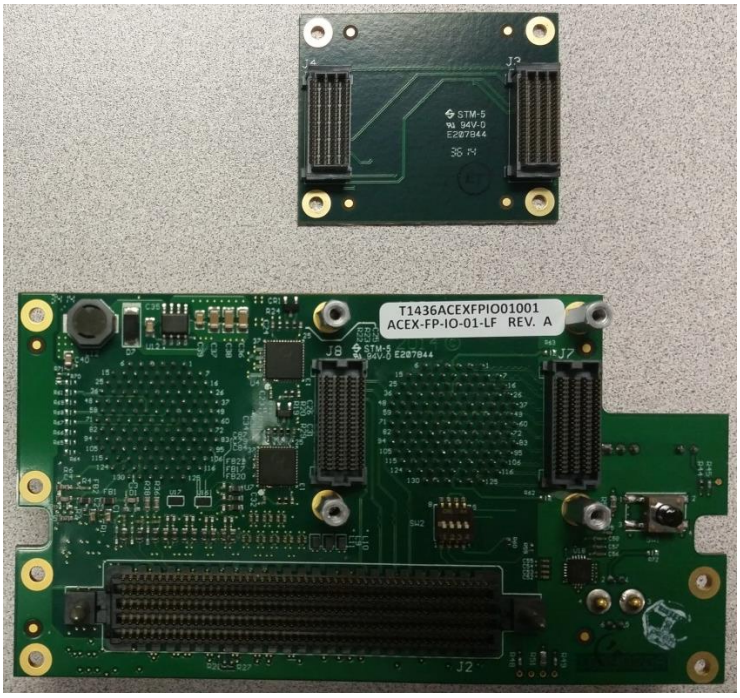
The connectors used to attach the mezzanine modules to the front panel board are offset and keyed to prevent incorrect installation. To install, align the four mounting holes with the attached standoffs on the front panel board. Attach board with M2.5 x 6mm screws on the four mounting holes.

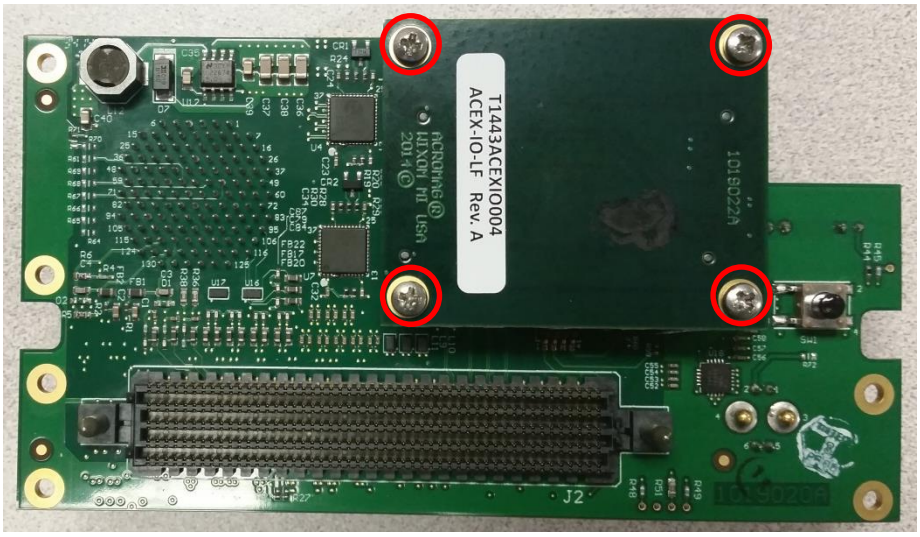
ACEX-FP-IO-02



ACEX-FP-IO-02 with ACEX-IO mezzanine boards installed on Site 1 and Site 2

ACEX-FP-IO-01





ACEX-FP-IO-01 with ACEX-IO mezzanine board installed on Site 1

Certificate of Volatility

Certificate of Volatility				
Acromag Model ACEX-FP-IO-01 ACEX-FP-IO-02	Manufacturer: Acromag, Inc. 30765 Wixom Rd Wixom, MI 48393			
Volatile Memory				
Does this product contain Volatile memory (i.e. Memory of whose contents are lost when power is removed) □ Yes ■ No				
Type (SRAM, SDRAM, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (SRAM, SDRAM, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Non-Volatile Memory				
Does this product contain Non-Volatile memory (i.e. Memory of whose contents is retained when power is removed) □ Yes ■ No				
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Other capabilities: Does device contain media storage capabilities: □ Yes ■ No If yes explain Is this device capable of wireless transmission: □ Yes ■ No If yes explain				

Acromag Representative				
Name: Joseph Primeau	Title: Dir. of Sales and Marketing	Email: solutions@acromag.com	Office Phone: 248-624-1541	Office Fax: 248-624-9234

Revision History

The following table shows the revision history for this document:

Release Date	Version	EGR/DOC	Description of Revision
07 JAN 15	A	MDW/ARP	Initial Acromag release.
01 JUL 15	B	PDG/ARP	Added 5028-566 and 5028-567 cables to order information. Reserved Pins 2 and 5 on J6 (Input power connector).